

ENGINEERING:

(NASA-SP-7037(44)) AERONAUTICAL

A SPECIAL BIBLIOGRAPHY ._

SUPPLEMENT 44 (NASA) 77 P HC

N74-31413

CSCL 01A

00/01

Unclas 47170

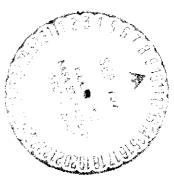
AERONAUTICAL ENGINEERING

A SPECIAL BIBLIOGRAPHY

WITH INDEXES

Supplement 44

MAY 1974



NATIONAL AERONAUTICS AND SPACE ADMINISTRATION

REPRODUCED BY
NATIONAL TECHNICAL
INFORMATION SERVICE
U.S. DEPARTMENT OF DOMERCE
U.S. DEPARTMENT OF DOMERCE

ACCESSION NUMBER RANGES

Accession numbers cited in this Supplement fall within the following ranges:

IAA (A-10000 Series) A74-19206 A74-22355

STAR (N-10000 Series) N74-15700 N74-17695

This bibliography was prepared by the NASA Scientific and Technical Information Facility operated for the National Aeronautics and Space Administration by Informatics Tisco, Inc.

The Administrator of the National Aeronautics and Space Administration has determined that the publication of this periodical is necessary in the transaction of the public business required by law of this Agency. Use of funds for printing this periodical has been approved by the Director of the Office of Management and Budget through July 1, 1974.

AERONAUTICAL ENGINEERING

A Special Bibliography

Supplement 44

A selection of annotated references to unclassified reports and journal articles that were introduced into the NASA scientific and technical information system and announced in April 1974 in

- Scientific and Technical Aerospace Reports (STAR)
- International Aerospace Abstracts (IAA).



This Supplement is available from the National Technical Information Service (NTIS), Springfield, Virginia 22151 for \$4.00. For copies mailed to addresses outside the United States, add \$2.50 per copy for handling and postage.

INTRODUCTION

Under the terms of an interagency agreement with the Federal Aviation Administration this publication has been prepared by the National Aeronautics and Space Administration for the joint use of both agencies and the scientific and technical community concerned with the field of aeronautical engineering. The first issue of this bibliography was published in September 1970 and the first supplement in January 1971. Since that time, monthly supplements have been issued.

This supplement to Aeronautical Engineering—A Special Bibliography (NASA SP-7037) lists 249 reports, journal articles, and other documents originally announced in April 1974 in Scientific and Technical Aerospace Reports (STAR) or in International Aerospace Abstracts (IAA).

The coverage includes documents on the engineering and theoretical aspects of design, construction, evaluation, testing, operation, and performance of aircraft (including aircraft engines) and associated components, equipment, and systems. It also includes research and development in aerodynamics, aeronautics, and ground support equipment for aeronautical vehicles.

Each entry in the bibliography consists of a standard bibliographic citation accompanied in most cases by an abstract. The listing of the entries is arranged in two major sections, IAA Entries and STAR Entries, in that order. The citations, and abstracts when available, are reproduced exactly as they appeared originally in IAA or STAR, including the original accession numbers from the respective announcement journals. This procedure, which saves time and money, accounts for the slight variation in citation appearances.

Three indexes—subject, personal author, and contract number—are included. An annual cumulative index will be published.

AVAILABILITY OF CITED PUBLICATIONS

IAA ENTRIES (A74-10000 Series)

All publications abstracted in this Section are available from the Technical Information Service, American Institute of Aeronautics and Astronautics, Inc., (AIAA), as follows: Paper copies are available at \$5.00 per document up to a maximum of 20 pages. The charge for each additional page is 25 cents. Microfiche ⁽¹⁾ are available at the rate of \$1.00 per microfiche for documents identified by the # symbol following the accession number. A number of publications, because of their special characteristics, are available only for reference in the AIAA Technical Information Service Library. Minimum airmail postage to foreign countries is \$1.00. Please refer to the accession number, e.g., A74-11072, when requesting publications.

STAR ENTRIES (N74-10000 Series)

A source from which a publication abstracted in this Section is available to the public is ordinarily given on the last line of the citation, e.g., Avail: NTIS. The following are the most commonly indicated sources (full addresses of these organizations are listed at the end of this introduction):

Avail: NTIS. Sold by the National Technical Information Service at the price shown in the citation. If no price is shown in a current STAR citation, it may be ascertained by referring to Government Reports Announcements or to NTIS. Beginning with documents announced in Issue 21, 1973, "stocked" reports, such as printed NASA reports are priced on a step schedule ranging irregularly from \$3.00 for a 1-to-25 page report to \$11.00 for 576 to 600 pages, plus \$2.00 for each additional 100-page increment. Demand print reports (those for which a facsimile reproduction will be made to fill orders) are priced at \$4.00 for the first 20 pages plus 25 cents for each five pages or portions thereof. These prices are not applied retroactively; i.e., reports previously announced at a certain price continue to be sold at that price. If "Avail: NTIS" without a price appeared in the citation of a NASA report (asterisked) it is sold at \$3.00 whether printed copy or facsimile is supplied. Because of price changes and possible surcharges, it is recommended that for any document announced in STAR before July 1970, NTIS be queried as to the price. Document prices are subject to change without notice. See "Avail: SOD" below for documents available from both the Superintendent of Documents and NTIS.

Microfiche. Microfiche is available from NTIS at a standard price of \$1.45 (regardless of age) for those documents identified by the # sign following the accession number (e.g., N74-10036#) and having an NTIS availability shown in the citation. Standing orders for microfiche of (1) the full collection of NTIS-available documents announced in STAR with the # symbol, (2) NASA reports only (identified by an asterisk (*)), (3) NASA-accessioned non-NASA reports only (for those who wish to maintain an integrated microfiche file of aerospace documents by the "N" accession number), or (4) any of these classes within one or more STAR categories, also may be placed with NTIS at greatly reduced prices per title (e.g., 45 cents) over individual requests. Inquiries concerning NTIS Selective Categories

⁽¹⁾ A microfiche is a transparent sheet of film, 105 x 148 mm in size, containing as many as 60 to 98 pages of information reduced to micro images (not to exceed 24:1 reduction).

in Microfiche should be addressed to the Subscription Unit, National Technical Information Service

Deposit Accounts and Customers Outside U.S. NTIS encourages its customers to open deposit accounts to facilitate the purchase of its documents now that prices vary so greatly.

NTIS customers outside the United States are reminded that they should add the following handling and postage charges to the standard or announced prices: hard (paper) copy, \$2.50 each document; microfiche, \$1.50 each document. For subscribers outside the United States who receive microfiche through the Selective Categories in Microfiche program, NTIS will add 15 cents for each title shipped.

- Avail: SOD (or GPO). Sold by the Superintendent of Documents, U.S. Government Printing Office, in hard copy. The price is given following the availability line. (An order received by NTIS for one of these documents will be filled at the SOD price if hard copy is requested. NTIS will also fill microfiche requests, at the standard \$1.45 price, for those documents identified by a #symbol.)
- Avail: NASA Public Document Rooms. Documents so indicated may be examined at or purchased from the National Aeronautics and Space Administration, Public Documents Room (Room 126), 600 Independence Ave., S.W., Washington, D.C. 20546, or public document rooms located at each of the NASA research centers, the Mississippi Test Facility, and the NASA Pasadena Office at the Jet Propulsion Laboratory.
- Avail: NASA Scientific and Technical Information Office. Documents with this availability are usually news releases or informational brochures available without charge in paper copy.
- Avail: AEC Depository Libraries. Organizations in U.S. cities and abroad that maintain collections of U.S. Atomic Energy Commission reports, usually in microfiche form, are listed in *Nuclear Science Abstracts*. Services available from the USAEC and its depositories are described in a booklet, *Science Information Available from the Atomic Energy Commission* (TID-4550), which may be obtained without charge from the USAEC Technical Information Center.
- Avail: Univ. Microfilms. Documents so indicated are dissertations selected from *Dissertation Abstracts*, and are sold by University Microfilms as xerographic copy (HC) at \$10.00 each and microfilm at \$4.00 each, regardless of the length of the manuscript. Handling and shipping charges are additional. All requests should cite the author and the Order Number as they appear in the citation.
- Avail: HMSO. Publications of Her Majesty's Stationery Office are sold in the U.S. by Pendragon House, Inc., (PHI), Redwood City, California. The U.S. price (including a service charge) is given, or a conversion table may be obtained from PHI.
- Avail: BLL (formerly NLL): British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England. Photocopies available from this organization at the price shown (If none is given, inquiry should be addressed to BLL).
- Avail: ZLDI. Sold by the Zentralstelle für Luftfahrtdokumentation und -Information, Munich, Federal Republic of Germany, at the price shown in deutschmarks (DM).
- Avail: Issuing Activity, or Corporate Author, or no indication of availability: Inquiries as to the availability of these documents should be addressed to the organization shown in the citation as the corporate author of the document
- Avail: U.S. Patent Office. Sold by Commissioner of Patents, U.S. Patent Office, at the standard price of \$.50 each, postage free.
- Other availabilities: If the publication is available from a source other than the above, the publisher and his address will be displayed entirely on the availability line or in combination with the corporate author line.

GENERAL AVAILABILITY

All publications abstracted in this bibliography are available to the public through the sources as indicated in the STAR Entries and IAA Entries sections. It is suggested that the bibliography user contact his own library or other local libraries prior to ordering any publication inasmuch as many of the documents have been widely distributed by the issuing agencies, especially NASA. A listing of public collections of NASA documents is included on the inside back cover.

SUBSCRIPTION AVAILABILITY

This publication is available on subscription from the National Technical Information Service (NTIS). The annual subscription rate for the monthly supplements, excluding the annual cumulative index, is \$18.00. All questions relating to subscriptions should be referred to the NTIS.

ADDRESSES OF ORGANIZATIONS

American Institute of Aeronautics and Astronautics Technical Information Service 750 Third Ave. New York, N.Y., 10017

British Library Lending Division, Boston Spa, Wetherby, Yorkshire, England

Commissioner of Patents U.S. Patent Office Washington, D.C. 20231

Engineering Sciences Data Unit Ltd. 251–259 Regent Street London W1R 7AD, England

ESRO/ELDO Space Documentation Service European Space Research Organization 114, av. Charles de Gaulle 92-Neuilly-sur-Seine, France

Her Majesty's Stationery Office P.O. Box 569, S.E. 1 London, England

NASA Scientific and Technical Information Facility P.O. Box 33 College Park, Maryland 20740

National Aeronautics and Space
Administration
Scientific and Technical Information
Office (KSI)
Washington, D.C. 20546

National Technical Information Service Springfield, Virginia 22151

Pendragon House, Inc. 899 Broadway Avenue Redwood City, California 94063

Superintendent of Documents U.S. Government Printing Office Washington, D.C. 20402

University Microfilms, Inc. A Xerox Company 300 North Zeeb Road Ann Arbor, Michigan 48106

University Microfilms, Inc. Tylers Green London, England

U.S. Atomic Energy Commission Technical Information Center P.O. Box 62 Oak Ridge, Tennessee 37830

Zentralstelle für Luftfahrtdokumentation und-Information 8 München 86 Postfach 880 Federal Republic of Germany

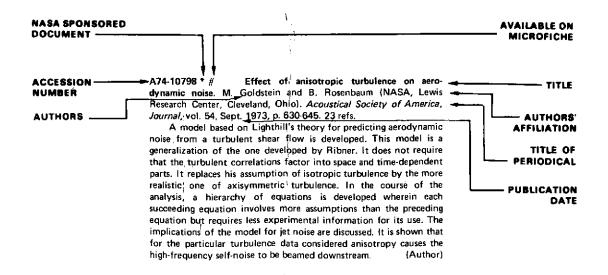
TABLE OF CONTENTS

		Page
STAR Entries	· · · · · · · · · · · · · · · · · · ·	187
Subject Index		
Personal Author Index		B-1
	x:	
TYPICAL NASA SPONSORED	CITATION AND ABSTRACT FROM S	TAR
DOCUMENT -		- MICROFICHE
ACCESSION NUMBER—	N74-10038*# Linguistic Systems, Inc., Cambridge, Mass. STUDY OF HEAVING MOTION IN AIR CUSHION VEHI-	CORPORATE SOURCE
71TLE	G. VandeSteen Washington NASA Nov 1973 121 p refs Transl into ENGLISH from "Etude du Mouvement de Pilonnement des Vehicules e Coussin d'Air" Brussels, NT 33, 1973 97 p	PUBLICATION DATE
AUTHOR —	(Contract NASw-2482) [NASA-TT-F-15106] Avail: NTIS HC \$8.25 CSCL 01C The behavior of three types of ground effect machines experiencing oscillations in vertical translation with no pitch, roll,	AVAILABILITY SOURCE
CONTRACT———————————————————————————————————	or yaw was studied. The configurations of the ground effect machines are described. It is shown that the two important movements in the problem are heaving and pitching, as yaw has virtually no effect of the performance of the vehicle. Preliminary	COBATI
REPORT-	tests showed that for all three types of vehicles, the transient state is in general an oscillating one, similar to a damped	

TYPICAL CITATION AND ABSTRACT FROM IAA

Author

sinusoid.



NASA -

AERONAUTICAL ENGINEERING

A Special Bibliography (Suppl. 44)

MAY 1974

IAA ENTRIES

A74-1928 Roll-plane analysis of on-aircraft antennas. W. D. Burnside, R. J. Marhefka, and C. L. Yu (Ohio State University, Columbus, Ohio). *IEEE Transactions on Antennas and Propagation*, vol. AP-21, Nov. 1973, p. 780-786. 8 refs. Contract No. N62269-72-C-0354.

The roll-plane radiation patterns of on-aircraft antennas are analyzed using high-frequency solutions. This is a basic study of aircraft-antenna pattern performance in which the aircraft is modeled in its most basic form. The fuselage is assumed to be a perfectly conducting circular cylinder with the antennas mounted near the top of bottom. The wings are simulated by arbitrarily many-sided flat plates and the engines by circular cylinders. The patterns in each case are verified by measured results taken on simple models as well as scale models of actual aircraft. (Author)

A74-19259 Photoelastic analysis of the stress field surrounding a fatigue crack. A. Berkovits, A. A. Betser, and A. Assa (Technion - Israel Institute of Technology, Haifa, Israel). Experimental Mechanics, vol. 14, Feb. 1974, p. 64-68. 9 refs.

A photoelastic analysis was carried out on plane polyester specimens containing a fatigue crack, in order to study the effect of plastic yielding around the crack tip on the elastic stress distribution in the vicinity of the crack. In general, results were in good agreement with values calculated for the case of a sharp-tipped crack. However, very near the crack tip, principal stresses obtained experimentally were slightly lower than calculated stresses, probably due to the bluntness of the fatigue crack. Also lines of constant stress tended to move behind the crack tip, in contrast with the calculated stresses, which occurred further forward over the field of investigation. (Author)

A74-19315 Recent advances in air traffic control radars.
C. E. Muehe (MIT, Lexington, Mass.). In: NEREM 73; Northeast Electronics Research and Engineering Meeting, Boston, Mass., November 6-8, 1973, Record. Part 1.

Newson, Mass., Institute of Electrical and Electronics Engineers, Inc., 1973, p. 96-99. U.S. Department of Transportation Contract No. FA72WAI-242; Contract No. F19628-73-C-0002.

Recent improvements in microwave radars used for air traffic control are described. The reviewed improvement varieties include: (1) radar parameter changes that increase the target-to-clutter ratio at the input of the radar; (2) efforts aimed at maintaining or improving the correlation from pulse to pulse of both target and clutter returns; and (3) optimizing filtering and thresholding.

M.V.E.

A74-19317 The national Microwave Landing System. J. W. Edwards (FAA, Microwave Landing System Branch, Washington, D.C.). In: NEREM 73; Northeast Electronics Research and Engineering Meeting, Boston, Mass., November 6-8, 1973, Record. Part 1. Newton, Mass., Institute of Electrical and Electronics Engineers, Inc., 1973, p. 212-215.

Discussion of some of the advanced capabilities of the Microwave Landing System (MLS) now under development and scheduled for initial operational implementation in 1978. Following a description of the system, its operational capabilities are reviewed. Special attention is given to the initial approach, final approach, flareout, landing and rollout, missed approach and departure guidance. M.V.E.

A74-19353 # Hydrogen - Make-sense fuel for an American supersonic transport. W. J. D. Escher (Escher Technology Associates, St. Johns, Mich.) and G. D. Brewer (Lockheed-California Co., Burbank, Calif.). American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-163. 11 p. 21 refs. Members, \$1.50; nonmembers, \$2.00.

Arguments in favor of the use of liquid-hydrogen fuel for power supersonic transport aircraft are presented, with a view toward the 'better and faster' SST the U.S. will eventually build. It is seen that, in addition to the economic and operational advantages, the use of hydrogen will establish a sound basis for evolving out of the present self-limited petroleum erainto tomorrow's hydrogen economy. V.P.

A74-19370 # Equipment for aircraft and helicopter technical servicing (Agregaty tekhnicheskogo obsluzhivaniia samoletov i vertoletov). V. A. Egorychev, E. I. Osokin, and E. D. Khachikian. Moscow, Izdatel'stvo Transport, 1973. 200 p. 35 refs. In Russian.

The specifics of some standard mobile aircraft servicing and maintenance equipment used at Soviet airports are discussed. Particular attention is given to the APA-50, APA-50M, and APA-100 electric generators; the UPG-250 and UPG-300 universal hydroelectric generators; the EGU-3 maintenance and servicing vehicle providing electric, hydraulic, and pneumatic power; the UBZ and UBZ-2 pneumatic starter systems, and the universal AZZM2 refueling and working-fluid supply vehicle.

A74-19371 # Parameters of RF flight navigation aids and their measurement (Parametry radionavigatsionnykh sredsty obespecheniia poletov i ikh izmerenie), V. E. Panagriev, A. A. Sospovskii, and I. A. Khaimovich. Moscow, Izdatel'stvo Transport, 1973, 384 p. In Russian.

Description of Soviet domestic and international standards and recommended procedures for ground-based and in-flight testing of RF navigation equipment employed in civil aviation. Operating principles of radio direction finders, altimeters, and beacon systems are described along with alignment procedures and accuracy control tests. Precision requirements posed for instrument landing systems are related with flight safety and traffic control aspects of modern airport operations.

T.M.

A74-19372 # Collection of problems on airplane piloting /4th revised and enlarged edition/ (Sbornik zadach po samoleto-vozhdeniju /4th revised and enlarged edition/). A. A. Leizerakh. Moscow, Izdatel'stvo Transport, 1973. 319 p. In Russian.

Description of underlying theoretical considerations and recommended practical procedures for piloting and navigation of jet airplanes in a variety of flight situations involving mild and adverse weather conditions in daytime and nighttime periods. Position, velocity, and course measurements used to provide data for navigation are explained, and typical navigation problems and solutions are described for cases involving the use of various on-board and ground-based navigation aids.

T.M.

A74-19374 # Flight vehicle control systems (Sistemy upravleniia letatel'nymi apparatami). V. A. Bodner, Moscow, Izdatel'stvo Mashinostroenie, 1973, 504 p. 33 refs. In Russian.

Theoretical problems, design principles, structural features, and applications of automatic flight vehicle control systems are discussed. The theory of automatic control of angular motions, center-of-mass motion, motion during landing approach, and during formation flight is considered. Problems of technical realization of control systems and problems of complex automation of aircraft through the use of onboard computers are examined. Particular attention is paid to automatic control systems for rockets and spacecraft. A number of other problems which have been widely discussed in the literature are also considered, including the use of in-built devices for monitoring control systems, methods and technical means of increasing flight safety during automatic control, and the problem of flight control at low altitudes.

A.B.K.

A74-19376 Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973, Seminar sponsored by the Institution of Electrical Engineers. Stevenage, Herts., England, Institution of Electrical Engineers (IEE Conference Publication, No. 109), 1973, 370 p. \$25,35.

Subjects in the area of materials and fabrication are considered, taking into account materials for surface acoustic wave components, the role of layered structures in surface acoustic wave technology, fabrication techniques for surface acoustic wave devices, and the economics of producing SAW materials for volume production. Other topics investigated are related to acoustic subsystems, programmable devices, filters, radar applications of SAW, digital signal processing, and communication systems. ATC applications are also discussed, giving attention to the reduction of garbling in secondary surveillance radar, high integrity ATC data links, and the application of SAW devices to an integrated communications, navigation, identification system for air traffic control.

G.R.

A74-19388 Applications of surface wave devices, J. D. Maines (Royal Radar Establishment, Malvern, Worcs., England). In: Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviernore, Scotland, September 25-28, 1973.

Stevenage, Herts., England, Institution of Electrical Engineers, 1973, p. 191-201. 21 refs.

SAW devices and their significance in systems are considered, giving attention to nondispersive fixed delay, band pass filters, SAW oscillators, matched filters, programmable matched filters, variable

delay lines, and devices derived from multistrip couplers. The use of SAW devices for particular systems applications is discussed, taking into account pulse compression radar, pseudo coherent radars, fusing systems, novel devices, communication applications, spread spectrum communications, and applications to ATC.

GR

A74-19390 Problems in civil air traffic control which SAW technology may impact. J. O. Clark (British Airways Board, London, England). In: Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973.

Stevenage, Herts., England, Institution of Electrical Engineers. 1973. p. 333-336.

General discussion of potentially promising applications of surface acoustic wave devices to improve the performance of electronics hardware in air traffic control systems. The more important uses considered include the reduction of garbling problems with secondary surveillance radars, modulation concepts for high-integrity data transmission systems, and development of integrated military communications systems.

A74-19391 The reduction of garbling in secondary surveillance radar. G. L. Moule (Royal Radar Establishment, Malvern, Worcs., England). In: Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973.

Stevenage, Herts., England, Institution of Electrical Engineers, 1973, p. 337-344.

An investigation is conducted concerning the possibility to develop a system which uses surface acoustic wave tapped delay lines as linear analog matched filters to provide a correlation between the received pulse train and a preset code. The employment of such a system would have the advantage that the existing transponder signals could be used. Modifications would be required only in the case of those controller ground stations for which garbling is a problem. Details concerning the surface acoustic wave subsystem are considered, giving attention to the basic approach, the experimental subsystem, and some experimental results. It is pointed out that further improvements regarding the garbling problem can be made by making use of the transponder reply characteristics.

G.R.

A74-19392 High integrity ATC data links, B. D. Parker (Dollman Electronics, Ltd., Biggin Hill, Kent, England). In: Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973. Stevenage, Herts., England, Institution of Electrical Engineers, 1973, p. 345-354.

Experiments between an aircraft and a ground station have shown that a microwave system based on a well proven four-signature encoding technique, together with surface acoustic wave devices (to carry the four signatures) offers high integrity data transfer for fixed length messages. In addition, the band spread coding offered by the SAW (Surface Acoustic Wave) AMF (Analogue Matched Filters) technique provides improved detection probability with an inbuilt level of signal privacy. The combination of these two fully asynchronous techniques with a hardware-proven L band equipment presents a significant advance in data communications. The splitting of traffic into message blocks (already a well established technique) can be combined with automatic request for repeats (ARQ) to rectify detection errors. These data links could seriously impact many areas of point to point data communications.

A74-19464 The technology and application of free-space power transmission by microwave beam. W. C. Brown (Raytheon Co., Microwave and Power Tube Div., Waltham, Mass.). *IEEE, Proceedings*, vol. 62, Jan. 1974, p. 11-25, 30 refs.

The point-to-point transfer of power by a microwave beam is an emerging technology with several unique characteristics and applications. The technology is examined in terms of the microwave beam itself, and the conversion technology between microwaves and do power at either end of the system. The existing efficiencies and the projected efficiencies for the overall system and its elements are emphasized. The procedure for designing a highly efficient microwave beam power transfer system of arbitrary length starting from the microwave generator and terminating with the receiving aperture is given. The potential applications are discussed in terms of the unique characteristics of microwave power transmission. The successful experimental work on microwave-powered helicopters is reviewed. A potential application to bring down power from space is examined. (Author)

A74-19471 // Trends in hydraulic systems of commercial transport aircraft. M. Alban (Société Messier-Hispano, Montrouge, Hauts-de-Seine, France). Istituto Internazionale delle Comunicazioni, Convegno Internazionale delle Comunicazioni, 21st, Genoa, Italy, Oct. 8-13, 1973, Paper. 23 p.

A review of developments in commercial aircraft design shows that two trends are currently observed in the aircraft industry. Hydraulics are increasingly associated to electrical and electronic technology in all systems designed for excellent dynamic performance, whereas use of mechanicohydraulic and electrohydraulic systems is made in simple sequentially operating automatic systems. Integrated systems and systems using digital circuits are receiving increased attention. This technological development is accompanied by regulations aimed at improving air transport safety.

V.P.

A74-19476 # Noise problems in airport design and in civil aircraft operation. N. Damonte (Genova, Università, Genoa, Italy). Istituto Internazionale delle Comunicazioni, Convegno Internazionale delle Comunicazioni, 21st, Genoa, Italy, Oct. 8-13, 1973, Paper. 30 p. 9 refs. In Italian.

Consideration of noise problems caused by aircraft not only in the vicinity of airports but also beyond the takeoff and approach areas. A need has arisen to gain a better and more exact knowledge of the ways and means for a quantitative assessment of the real noise disturbance caused to the population by overflying aircraft. In the specific case of aircraft noise recurring at certain intervals, it is concluded that the measuring standard providing the best indication of real disturbance caused to man is the 'NNI' system, which besides measuring the noise intensity and spectrum frequency also takes into account round-the-clock noise intermittence. Based upon the foregoing, it has been rather easy to demonstrate that the noise disturbance caused by incoming and outgoing aircraft is affecting a growing number of people as the distance from the airport increases, since the noise is spreading over an ever growing area, obviously up to the point in which lateral noise propagation is counterbalanced by its reduced intensity due to the increased flight altitude of the aircraft. Noise pollution caused by aircraft is currently being tackled from two sides at the same time. First of all, by reducing noisiness at the source by the utilization of bypass engines with a high dilution ratio developed according to highly sophisticated soundproofing techniques and, secondly, by adopting special antinoise operating procedures during the night in some airports. (Author)

A74-19479 # Energy problems in air transportation. G. E. Lundquist (FAA, Washington, D.C.). Istituto Internazionale delle Comunicazioni, Convegno Internazionale delle Comunicazioni, 21st, Genoa, Italy, Oct. 8-13, 1973, Paper. 25 p. 9 refs.

Energy development and usage are worldwide problems. The prospects of energy supply and demand over the long term indicate a critical impact on air transportation. Unless energy is conserved through various alternative actions, air transportation will suffer.

This paper analyzes options for reducing demand, for improving efficiency, and for diversifying, both through alternative fuels and transportation modes, for the near term (one to 15 years) and the 15-year plus time frame. These options offer a 30 to 50% reduction in projected fuel requirements. (Author)

A74-19481 # Airports evolution and qualification (Evoluzione e qualificazione degli aeroporti). G. Pezzani. Istituto Internazionale delle Comunicazioni, Convegno Internazionale delle Comunicazioni, 21st, Genoa, Italy, Oct. 8-13, 1973, Paper. 27 p. 14 refs. In Italian.

The years 1950s and 1960s which mark the beginning of the air transportation industry, were decisive for airport structure through the realization of suitable flight and operational infrastructure capable of assuming practicability and receptivity. The 1970s with jumbo jets have new problems of dimensions and qualification for large airports together with problems of accessibility and ecology. Thus it is necessary to consider if the way followed until now, which leads to the superairport, does not have to be reexamined for a different solution to the problem of qualified airport systems. In the 1980s and thereafter, in addition to the use of atomic energy in air transportation, a new and unforeseeable leap will be made with mercantile aircraft. (Author)

A74-19486 # The implications for air transportation of energy shortage. L. A. Mountford and R. E. Williams (Shell International Petroleum Co., Ltd., London, England). Istituto Internazionale delle Comunicazioni, Convegno Internazionale delle Comunicazioni, 21st, Genoa, Italy, Oct. 8-13, 1973, Paper. 25 p.

After referring to the enormous increase in air transport during the last twenty years, encouraged by the considerable availability of low cost fuel, the authors discuss the problems and difficulties which may in the near future affect the aviation market's oil supplies. The more demanding quality requirements and the ever growing needs of light distillates by all the other markets are taken into consideration. Attention is given, moreover, to the possibilities open to the oil companies, aircraft manufacturers, and airline operators in order to moderate and alleviate this critical situation. (Author)

A74-19487 # Future advanced-technology aircraft in the context of an integrated transport system (I futuri aeromobili a tecnologie avanzate nel quadro di un sistema di trasporti integrato). V. Correnti. Istituto Internazionale delle Comunicazioni, Convegno Internazionale delle Comunicazioni, 21st, Genoa, Italy, Oct. 8-13, 1973, Paper. 32 p. In Italian.

The development of worldwide air transportation is conditioned by the technical evolution of aircraft and by their integration into the global transport system. The trends of this evolution are examined on the basis of reasonable predections for the next ten years. Reference is made to the development of new subsonic aircraft having greatly improved acceptability and integration characteristics from the economic point of view.

(Author)

A74-19489 F-15 progress report. II. L. Burrows (USAF, Edwards AFB, Calif.; McDonnell Douglas Corp., St. Louis, Mo.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 13-22.

Flight test and performance data as obtained for the aircraft during the preceding year are reported, giving attention to difficulties concerning the maneuvering forces, lateral sensitivity problems, and questions with respect to cross wind landings. The approaches used for overcoming the difficulties concerning the control of the aircraft are discussed. Tables and graphs showing the aircraft flight history, the flight test status, and the control characteristics of the aircraft are presented.

G.R.

A74-19490 Longitudinal stability for supersonic transport aircraft. T. D. Benefield (USAF; FAA, Washington, D.C.) and R. Abrams (Rockwell International Corp., El Segundo, Calif.), (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 23-32.

In November 1972, a Federal Aviation Administration flight test team was engaged in a flight test program to evaluate as a primary objective the Concorde's supersonic static longitudinal stability characteristics. Two major secondary objectives were to evaluate the aircraft's static longitudinal stability characteristics in the landing configuration under failure conditions and to evaluate the aircraft's stall prevention system.

A74-19491 FAA certification of the \$-58T helicopter for instrument flight. I. J. R. Wright (United Aircraft Corp., Sikorsky Aircraft Div., Stratford, Conn.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4. 1974. p. 35-40.

The first flight of the S-58 took place in 1954. The aircraft was originally designed and produced for the U.S. Navy as an antisubmarine-warfare helicopter employing dip sonar. Subsequently, it was manufactured for the Marines and for the Army. The change from the S-58 to the S-58T basically involves an engine modification to add extended life and usefulness to an already proven helicopter. An IFR Certification Program Outline concerning the S-58T was presented in July of 1972. Details of the flight test program are discussed together with questions of aircraft avionics.

G.R.

A74-19492 FAA certification of the S-58T helicopter for instrument flight. II. J. J. Shapley (FAA, Flight Standards Div., Burlington, Mass.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 41-44.

The applicable Federal Air Regulation for the FAA certification states that the Rotorcraft must have any additional characteristics required for night or Instrument Operation if certification for those kinds of operation is requested. In addition there are Interim Standards for Helicopter Instrument Flight Requirements. Current test guidelines are considered together with various items of interest during the certification program.

G.R.

A74-19496 S-3A initial operational test and evaluation. C. W. Walck (U.S. Navy, Air ASW Section, Norfolk, Va.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 69-78.

The various stages in the S-3A program are discussed, giving attention to the standard operating procedure prior to November 1971 and developments after this date. In the year that elapsed from initial efforts to inaugurate the Initial Operational Test and Evaluation (IOT and E) procedure until the first combined test effort in November 1972 many noteworthy achievements were amassed by the integrated S-3A Test Team. Conclusions drawn on the basis of nearly two years experience with IOT and E are discussed, giving attention also to effects of IOT and E on the contractor.

G.R.

A74-19497 Putting the computer in its place. T. M. Kastner (Grumman Aerospace Corp., Bethpage, N.Y.) and R. P. LeCann (Grumman Data Systems Corp., Bethpage, N.Y.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 143-164.

This presentation describes the development and operational employment of an advanced, flight test, data system by the Grumman Aerospace Corporation. The system known as ATS (Automated Telemetry System) is viewed in terms of its conceptual requirements, design and construction, operational checkout, and use

in the development testing of the F-14A Tomcat. Lessons learned are presented as they relate to the roles of the engineer, pilot, and management. In addition to specific conclusions in the above areas, it is generalized that this and similar systems represent the thrust of future technology in the field of flight testing. (Author)

A74-19498 Vectored thrust V/STOL shipboard testing. J. E. Iles (U.S. Navy, MCAS Beaufort, S.C.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 165-178, 5 refs.

The AV-SA Harrier and two test ships of the LPH-2 class were used in the investigation. The AV-SA Harrier is a single seat, transonic, light attack aircraft with a vertical/short take-off and landing capability. Two models of the Pegasus engine were tested. Standard carrier suitability test methods were used when applicable. The results of the investigation are discussed, giving attention to workload, minimum ceiling and visibility, performance characteristics, and questions of control capability.

G.R.

A74-19499 The case for engine flying test beds. J. H. Pollitt (Rolls-Royce /1971/, Ltd., Derby, England). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 179-187.

It is pointed out that there is the need for an improvised vehicle to undertake flight evaluation if the development of an engine precedes or is done simultaneously with the manufacture and development of the aircraft. In this case either a Flying Test Bed (FTB) or an Altitude Test Facility, or both can be used. Initial difficulties experienced with FTB's are considered together with the approaches used for overcoming these difficulties. It has been found that the type of installation which will give good results will depend on the development state of the engine.

G.R.

A74-19500 BD-5 flight test program report. L. H. Berven (Bede Aircraft, Inc., Newton, Kan.). (Society of Experimental Test Pilots, Symposium, 17th, Beverly Hills, Calif., Sept. 26-29, 1973.) Society of Experimental Test Pilots, Technical Review, vol. 11, no. 4, 1974, p. 201-209.

The BD-5 is an amateur-built general aviation aircraft which represents a new concept in sport aviation. The new aircraft is basically a single-place, low wing monoplane pusher with several unique design characteristics. Development flight tests are discussed together with instrumentation, flying qualities, lateral/directional stability, stalls, current flight tests, and the little turbojet engine selected for the aircraft.

G.R.

A74-19629 # Some problems associated with noise attenuation at jet engine test facilities (O pewnych zagadnieniach zwiazanych z tłumieniem halasu w hamowniach silnikow odrzutowych). S. Augustyniak, H. Kaczmarek, and J. Bartoszak (Poznan, Politechnika; BIPROMASZ, Poznan, Poland). In: Conference on the Topic of Combatting Noise, 3rd, Warsaw, Poland, November 5-8, 1973, Proceedings.

Warsaw, Polska Akademia Nauk, 1973, p. 14-18. In Polish.

A74-19631 # Analysis of axisymmetric turbulence relevant to jet noise. H. V. Fuchs (Deutsche Forschungs- und Versuchsanstalt für Luft- und Raumfahrt, Institut für Turbulenzforschung, Berlin, West Germany). In: Conference on the Topic of Combatting Noise, 3rd, Warsaw, Poland, November 5-8, 1973, Proceedings.

Warsaw, Polska Akademia Nauk, 1973, p. 125-129. 6

Pressure probes were positioned downstream from a jet source in a plane normal to the jet axis at and away from the latter. A correlation analysis of the measurements was carried out in an

attempt to separate (for a given narrow frequency band) the axisymmetric content of the turbulent pressure field from all the other disturbances (including those which may be realistically described by some sort of isotropic model). Graphs illustrate the variation of the axisymmetric spectrum of the pressure fluctuation with distance from the jet axis.

T.M.

A74-19638 # Statistical analysis of aircraft noise levels (Analiza statystyczna poziomu dzwieku halasu lotniczego). T. Rajpert (Zarzad Lotniskowy, Warsaw, Poland). In: Conference on the Topic of Combatting Noise, 3rd, Warsaw, Poland, November 5-8, 1973, Proceedings. Warsaw, Polska Akademia Nauk, 1973, p. 267-273. In Polish.

A statistical analysis of aircraft noise level fluctuations at Okecie Airport (Warsaw) has been used to determine temporal distributions of noise levels corresponding to starting and landing aircraft. It is shown that correlation of these statistical data with other pertinent factors (aircraft weight and various atmospheric parameters) can be used to define the effects of ambient conditions on airport noise levels and to compare the noise properties of different aircraft. T.M.

A74-19684 Flexible lifting surfaces (Surfaces portantes souples). P. Vaussy (Ecole Nationale Supérieure de Mécanique, Nantes, France). (Association Technique Maritime et Aéronautique, Session, 73rd, Paris, France, May 14-18, 1973.) Association Technique Maritime et Aéronautique, Bulletin, no. 73, 1973, p. 361-394; Discussion, p. 395, 396. 12 refs. In French.

Consideration of a steady flow of an inviscid compressible fluid, uniform ad infinitum, about two flexible, though inextensible, surfaces. Each surface consists of a rectangular membrane supported by rectilinear and parallel leading and trailing edges. Using an integral lifting-surface equation and general membrane-equilibrium equations, a linearized computation method is developed. Lift, induced drag, and moment coefficient variations are investigated for various configurations.

M.V.E.

A74-19690 Helicopter applications at sea (Les applications maritimes de l'hélicoptère). A. Renaud. (Association Technique Maritime et Aéronautique, Session, 73rd, Paris, France, May 14-18, 1973.) Association Technique Maritime et Aéronautique, Bulletin, no. 73, 1973, p. 621-632; Discussion, p. 633-638. In French.

Current and future applications of the helicopter at sea are reviewed for both military and commercial service tasks. Discussed missions include rescue, antisubmarine warfare, mine sweeping, the deposition of pilots on merchant ships at sea or of personnel and supplies on oil-drilling ocean platforms. Some of the navigation and safety problems involved are examined.

M.V.E.

A74-19726 The fuel crisis and the controller. J. E. McNamara (Air Transport Association of America, Washington, D.C.). Journal of Air Traffic Control, vol. 16, Jan.-Feb. 1974, p. 5-9.

The effectiveness of the use of optimum flight profiles as a means of reducing the fuel crisis is studied on the basis of selected performance data for the B-727-200 series aircraft. It is shown that the success of airline fuel conservation programs will depend on the controller and the facility planner. A discussion of a method of measuring fuel savings shows that a descent profile must be applied to existing procedures to determine where these savings can be realized.

V.P.

A74.19727 A look at the British ATC scene. II. L. S. Vass. Journal of Air Traffic Control, vol. 16, Jan. Feb. 1974, p. 26-29.

The Mediator system, currently in operation at the London ATC Center (LATCC) is discussed. Mediator is the code name given to the

ATC portion of a joint air defense/ATC control radar system for the UK. Primary and secondary radar data is input to LATCC from 23-cm and 50-cm radars located on the London airport, and from remotely linked strategic radars in the country. SST preparations, now in progress, are examined, which include a planned substitution of semivertical radar displays for the present horizontal ones. Some expects of the consolidation and refinement of the Mediator system expected during the next decade are discussed. The possibility of solving traffic flow problems by implementing flow control schemes between nations in Europe is examined.

V.P.

A74-19751 # Lockheed S-3A avionics - Three system digital flight guidance. Aircraft Engineering, vol. 46, Jan. 1974, p. 4-8.

The system consists of three systems integrated into one: automatic flight control system, central air data system, and flight display and interface system. Although integrated for interface compatibility, the three are here considered separately. In addition to the flight guidance system, an analog-to-digital signal conditioner is provided that is used with the magnetic anomaly detector system. There are also solid-state servomechanism position indicators. F.R.L.

A74-19753 # Lockheed S-3A avionics - Tactical voice and data communication. Aircraft Engineering, vol. 46, Jan. 1974, p. 13, 16, 17.

All units feature in-flight performance monitoring and faults isolation. They are fully compatible with versatile avionics shop test maintenance techniques and are adaptable to general purpose automatic test systems. Predicted mean time to repair {MTTR} at the organizational level is on the order of 10 min. Cost-effectiveness and logistical benefits are obtained through a high degree of commonality among assemblies and components, which reaches as high as 90% at the card level. The main elements of the tactical communication system are the UHF transceiver, the control unit, the radio set, the HF antenna coupler, and the data terminal set.

F.R.L.

A74-19754 # Lockheed S-3A avionics - Transmitting data by multiprocessor computer. *Aircraft Engineering*, vol. 46, Jan. 1974, p. 21-24.

A system is described which is not only capable of working in a self-sufficient manner aboard a patrolling aircraft, but also has the ability to transmit large quantities of data to a command complex for evaluation and subsequent use in making operational decisions. Aboard the aircraft a variety of avionics sensors and subsystems is controlled by the computer. The system processes information for display, maintains weapon and search stores inventories, computes and provides weapon release commands, maintains position status, keeps mission records, and assists in classification of acoustic data. Multipurpose cathode ray tube displays provide the crew members with the information necessary to carry out their control functions during the ASW missions. Information supplied to the computer comes from the acoustic data processor, the various ASW sensors, the crew, and the onboard communication and navigation equipment.

F.R.L.

A74-19777 * # Flowfield analysis for successive oblique shock wave-turbulent boundary-layer interactions. C.-C. Sun and M. E. Childs (Washington, University, Seattle, Wash.). Journal of Aircraft, vol. 11, Jan. 1974, p. 54-59. 8 refs. Grant No. NGR-48-002-047.

Description of a procedure for predicting the flowfields that develop when successive interactions between oblique shock waves and a turbulent boundary layer occur. Such interactions may occur, for example, in engine inlets for supersonic aircraft. A control volume analysis is used to predict changes in the flow field across the interactions. Two bleed flow models are considered. The predicted results are compared with measured results and are shown to be in

good agreement when the bleed flow rate is low, or when there is no bleed. Shortcomings of the bleed flow models at higher bleed flow rates are discussed.

M.V.E.

A74-19778 # Trailing vortex effects on following aircraft. J. D. Iversen (Iowa State University of Science and Technology, Ames, Iowa) and S. Bernstein (Washington, University, Seattle, Wash.). Journal of Aircraft, vol. 11, Jan. 1974, ρ. 60, 61. Contract No. F44620-69-C.

Two one-hundredth scale unpowered models of the Lockheed C-130 transport aircraft were tested in a three-dimensional smoke tunnel. A smoke stream was directed at the nose of the leading model. The approximate vertical location of the trailing model relative to the wake of the leading model could then be obtained from photographs. A simple strip theory technique was used to calculate lift and rolling moment on a trailing aircraft flying at various positions relative to the vortex trail.

G.R.

A74-19852 # A study of the characteristics of measuring elements of pneumonic systems (Issledovanie kharakteristik izmeritel'nykh elementov sistem pnevmoniki). L. A. Zalmanzon (Akademiia Nauk SSSR). Institut Problem Upravleniia /Avtomatiki i Telemekhaniki/, Moscow, USSR). B'lgarska Akademiia na Naukite, International Fluidics Conference, 4th, Varna, Bulgaria, Oct. 14-18, 1972, Paper. 10 p. 6 refs. In Russian.

The results and analysis of restrictor and jet elements used for position measurement and indication are presented. A procedure for calculating systems containing these elements is described. (Author)

A74-19859 # Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices. V. Tesar (Ceske Vysoke Uceni Technicke, Prague, Czechoslovakia). B'Igarska Akademiia na Naukite, International Fluidics Conference, 4th, Varna, Bulgaria, Oct. 14-18, 1972, Paper. 32 p.

A line of new, reed-type fluidic elements is proposed and investigated. The results of an experimental investigation of their basic properties led to the construction of a multipurpose fluidic two-port element functional prototype, which was successfully demonstrated to be able to function alternatively as a stable oscillation generator, as a fluidic/electric transducer or flow sensor with electric pulse-frequency output, and as a diode. Also investigated was a model of a mechanically tunable oscillator and a three-port, fluidically controlled oscillator element, which is also capable of functioning as a miniature logic element or flow sensor with pulse-frequency fluidic output. (Author)

A74-19884 # A new pneumatic hybrid control system. A. Boros, L. Helm, Z. Marton, and A. Szucs (Magyar Tudomanyos Akademia, Automatizalasi Kutato Intezet, Budapest, Hungary). B'Igarska Akademiia na Naukite, International Fluidics Conference, 4th, Varna, Bulgaria, Oct. 14-18, 1972, Paper. 20 p.

Reduction of air consumption is an important problem when designing a pneumatic element or system. This question has become more important as pure fluidics have been developed. Though consumption can be reduced to a certain level by the use of turbulence amplifiers, this is not a complete solution to the problem. Using Coanda elements a tendency can be observed to lower consumption by reducing nozzle sizes and supply pressure. It is known that neither the first nor the second can be achieved over every limit because of different reasons involving fluid mechanics, element manufacturing, reliability, etc. An attempt was made to find a solution from the point of view of system techniques. A hybrid system is described.

A74-19908 The effect of interfering signals on the performance of angle of arrival estimates. T. P. McGarty (MIT, Lexington, Mass.). IEEE Transactions on Aerospace and Electronic Systems, vol.

AES-10, Jan. 1974, p. 70-77, 19 refs. FAA-supported research.

The performance of angle of arrival estimates using an array in the presence of interfering signals is evaluated using the Cramer-Rao bound. To do this, a model for interference is developed which presents the interference as narrowband, temporally white, but spatially correlated, noise. The bound is evaluated and it is shown to depend upon the ambiguity function of the array and spatial correlation matrix of the noise plus interference. Motivation of the model in the context of air traffic control and sonar surveillance is presented.

A74-19915 Electromagnetic effects of aircraft wake-active feuillet interaction. A. J. Kelly (Princeton University, Princeton, N.J.) and M. Handelsman (Vermont University, Burlington, Vt.). IEEE Transactions on Aerospace and Electronic Systems, vol. AES-10, Jan. 1974, p. 136-143, 14 refs.

A mechanism by which an aircraft wake can interact strongly with the electromagnetic radiation present in an active elevated anomalous refractivity region (active feuillet) is analyzed. The aircraft wake structure, assumed to consist of twin contrarotating vortices plus entrained irrotational gas, trailing behind the wings of typical large aircraft is shown to be capable of descending a distance of approximately three wing span distances and attaining a length of the order of 10 km, prior to instability-induced disruption. The parcel of air such a descending coherent wake structures can convey into an active feuillet is demonstrated to alter significantly the local refractive index of the duct and induce substantial radiation spillage. The general characteristics of the electromagnetic radiation produced by this interaction process (i.e., scattering by diaphanous objects) is described. (Author)

A74-19935 # Calculation of supersonic flow past conical bodies (K raschetu sverkhzvukovogo obtekaniia konicheskikh tel). M. Ia. Ivanov and A. N. Kraiko. *Zhurnai Vychislitel'noi Matematiki i Matematicheskoi Fiziki*, vol. 13, Nov.-Dec. 1973, p. 1557-1572. 17 refs. In Russian.

Application of a finite-difference scheme to the calculation of three-dimensional supersonic flows past various types of conical bodies, including circular, elliptic, and near-pyramidal cones; V-shaped and delta wings; and a combination of a detta wing and a circular cone. In this case the solutions describing the corresponding conical flows are developed in a process of buildup along a radial coordinate. The difference scheme employed is a straight-through scheme, which makes it possible to perform the calculation without specially determining the internal shock waves which are formed, for example, on the leeward (shadow) side of the cones at fairly large angles of attack. At the same time, the calculation of the head shock wave does not require the incorporation of any additional algorithm into the computer program, since the calculation of shock waves is one of the elements of the proposed difference scheme.

A,B,K.

A74-19957 Some transmission characteristics of AERO-SAT-type air traffic control systems (Certains aspects des transmissions dans les systèmes de controle de trafic aérien du type AEROSAT). P. Bréant, G. David, and C. Olier (Télécommunications Radioélectriques et Téléphoniques, Paris, France). In: International Conference on Numerical Telecommunications by Satellite, 2nd, Paris, France, November 28-30, 1972, Proceedings.

Paris, Editions Chiron, 1972, p. 50-59. 12 refs. In

French.

The digital transmission advantages of geostationary satellite aided, AEROSAT-type air traffic control systems are reviewed. It is shown that such systems benefit greatly from the flexibility afforded by the interchangeability of telephone and data transmission channels, and that the telemetry function accrues as a by-product of the transmission method.

M.V.E.

A74-20039 # Atmospheric ozone - Possible impact on stratospheric aviation, M. B. McElroy, J. E. Penner, J. C. McConnell (Harvard University, Cambridge, Mass.), and S. C. Wofsy (Harvard University; Smithsonian Astrophysical Observatory, Cambridge, Mass.). Journal of the Atmospheric Sciences, vol. 31, Jan. 1974, p. 287-303. 55 refs, NSF Grant No. GA-33990X.

Models for stratospheric temperature and ozone are developed and shown to give good agreement with observational data. The atmosphere is in local radiative equilibrium at heights above 35 km, and concentrations of ozone above 28 km can be satisfactorily estimated by models assuming photochemical equilibrium. Nitric oxide, formed by photochemical decomposition of nitrous oxide and ammonia, is an important catalyst for recombination of odd oxygen below 50 km, and is responsible for a reduction, by about a factor of two, in the computed column density of ozone. Possible consequences of nitric oxide and water vapor exhausted by stratospheric aircraft are discussed. It is argued that there should be a significant reduction in the concentration of stratospheric ozone, with a related decrease in stratospheric temperature, if the globally averaged aircraft source of nitric oxide exceeds twenty million molecules/sq cm/sec, approximately half the natural source of stratospheric nitric oxide.

T.M.

A74-20046 An approximate method for the calculation of the pressure distribution on a wing-cone configuration. A. Reggiori (Milano, Politecnico, Milan, Italy). L'Aerotecnica - Missili e Spazio, vol. 52, Oct. 1973, p. 340-345, 6 refs.

A74-20049 # The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus (Die Entwicklung und Bewertung von Gewichtsabschätzungsformeln für den Flugzeugentwurf unter Zuhilfenahme von Methoden der mathematischen Statistik und Wahrscheinlichkeitsrechnung). W. Schneider. Berlin, Technische Universität, Fachbereich Verkehrswesen, Dr.-Ing. Dissertation, 1973, 257 p. 77 refs, In German.

A74-20069 # Realization of the power amplification effect in a ramjet unit by applying the principle of boundary layer separation (Ob organizatsii effekta usileniia moshchnosti v struinom priamotochnom elemente na osnove printsipa otryva pogranichnogo sloia). V. P. Lebedev, V. I. Miagkov, and G. A. Kopkov (Moskovskii Energeticheskii Institut, Moscow, USSR). *Mashinostroenie*, no. 12, 1973. p. 73-76. In Russian.

A74-20076 Conference on Decision and Control, 4th and Symposium on Adaptive Processes, 12th, San Diego, Calif., December 5-7, 1973, Proceedings. Conference sponsored by the Institute of Electrical and Electronics Engineers. New York, Institute of Electrical and Electronics Engineers, Inc., 1973, 806 p. Members, \$18.75; nonmembers, \$25.

New concepts in decision making, control, and adaptation are described together with applications to current problems in such areas as energy, transportation, information, communication, economics, and urban-social systems. Specific topics include Kalman filtering techniques, information patterns and classes of stochastic control laws, computational methods for control problems, adaptive computer processing, observer algorithms, random variables in digital simulation, approximation methods in optimal control and mathematical programming, organizational systems, adaptive communications systems, decision algorithms in information theory, aircraft navigation and guidance, air traffic control, pattern recognition and interactive graphics, identification topics, and human decision making in automated control systems.

T,M.

A74-20095 * Adaptive systems research in the NASA. R. Montgomery (NASA, Langley Research Center, Hampton, Va.). In: Conference on Decision and Control, 4th and Symposium on Adaptive Processes, 12th, San Diego, Calif., December 5-7, 1973, Proceedings. 1 New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 378-388, 13 refs.

The past contributions of NASA to adaptive control technology are reviewed. The review places emphasis on aircraft applications although spacecraft and launch vehicle control applications are included. Particular emphasis is given to the adaptive control system used in the X-15 research aircraft. Problem areas that limited the realizable performance of this adaptive system are discussed. Current technological capabilities are used to extrapolate the present-day potential for adaptive flight control. Specifically, the potential created by use of the modern high-speed digital computer in flight control is discussed. Present plans for research in digital adaptive control systems for the NASA F8-C digital fly-by-wire program are presented. These plans are currently envisioned to include research in at least two types of adaptive controls, the system identification/on-line design type, and the model reference type.

(Author)

A74-20096 Analysis of aided inertial navigation systems performance on international routes. W. C. Hoffman (Aerospace Systems, Inc., Burlington, Mass.) and W. M. Hollister (MIT, Cambridge, Mass.). In: Conference on Decision and Control, 4th and Symposium on Adaptive Processes, 12th, San Diego, Calif., December 5-7, 1973, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 433-441, 12 refs. U.S. Department of Transportation Contract No. TSC-473.

The performance of hybrid navigation systems for commercial transoceanic flights is evaluated by means of a digital computer simulation. Error models are developed for aided-inertial navigation systems with external measurements from Doppler radar, Omega, and satellite-ranging. Key features of the simulation program AIRNAV (Aided-Inertial Reference NAVigation) are described. Covariance matrix error analysis is used to obtain the navigation error histories, with recursive navigation techniques to incorporate the measurements. A 34th-order error state vector is defined, which requires the numerical integration of up to 585 first-order differential equations to propagate the covariance matrix. Example computer results are presented for a typical North Atlantic flight. (Author)

A74-20098 Simplified navigation for unmanned aircraft. R. W. Elsner and M. G. Currie (Lear Siegler, Inc., Santa Monica, Calif.). In: Conference on Decision and Control, 4th and Symposium on Adaptive Processes, 12th, San Diego, Calif., December 5-7, 1973, Proceedings.

New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 449-456. 5 refs.

This paper describes some design considerations of a navigation filter for an unmanned aircraft. Emphasis is on a simple, but accurate approach to navigation. Design considerations are discussed for the implementation of a fixed gain extended Kalman filter. Representative sensors including true airspeed, Doppler, and LORAN are described, and their integration into a modular navigation system is explained. (Author)

A74-20099 Realization of a horizontal collision avoidance system. J. S. Karmarkar and A. W. Merz (Systems Control, Inc., Palo Alto, Calif.). In: Conference on Decision and Control, 4th and Symposium on Adaptive Processes, 12th, San Diego, Calif., December 5-7, 1973, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 457-461. 8 refs.

Horizontal aircraft collision avoidance maneuvers are examined,

along with the associated computer requirements. It is shown that analytical methods can be used to specify the turn maneuvers when the dynamic model of the relative motion includes both speeds and both maximum turn rates as arbitrary parameters.

M.V.E.

A74-20120 * Digital adaptive flight controller development. H. Kaufman and P. Berry (Rensselaer Polytechnic Institute, Troy, N.Y.), In: Conference on Decision and Control, 4th and Symposium on Adaptive Processes, 12th, San Diego, Calif., December 5-7, 1973, Proceedings.

New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 780-783. 7 refs. Grant No. NGR-33-018-183.

The development of a digital adaptive flight control algorithm is described that combines a weighted least squares estimator with optimal linear regulator control logic designed to minimize a quadratic model following performance index. Very promising results for a typical fighter aircraft's trajectory over six distinct flight conditions are reported.

M.V.E.

A74-20125 Possible effects of a fleet of supersonic transports on the stratospheric ozone shield. H. I. Schiff and J. C. McConnell (York University, Toronto, Canada). Reviews of Geophysics and Space Physics, vol. 11, Nov. 1973, p. 925-934. 32 refs.

The possibility that large quantities of water and various oxides of nitrogen /NO(x)/ can be injected into the stratosphere by a fleet of SSTs has raised concern over the possibility of a reduction in the ozone (O3) shield. Calculating such a reduction requires knowledge of the roles of NO(x) and H2O in the natural O3 budget. Recently, many of the rate constants required in a quantitative analysis have become known. These results incorporated into model calculations with natural sources of NO(x) and observed H2O mixing ratios tend to indicate that these constituents play an important role in the O3 budget in the natural stratosphere. At the same time, recent measurements of NO, NO2, and HNO3 have become available. The HNO3 measurements by several different groups appear to be mutually consistent. The results of both the NO measurements and the NO2 measurements, however, differ by an order of magnitude. Although the rate data available are not of sufficient accuracy to resolve the discrepancy between the measurements, it does appear that there will be a reduction in stratospheric O3 caused mainly by (Author) HO(x) or NO(x) catalysis or both.

A74-20129 # A photo-electric position-following mechanism. C. S. Indulkar (Indian Institute of Technology, New Delhi, India). Institution of Engineers (India), Journal, Electronics and Telecommunication Engineering Division, vol. 54, Sept. 1973, p. 5-7.

In many electromechanical systems, it is necessary that the movable arm of a variac, whose output voltage can be used for measurement or control purposes, is made to follow the rotation of a driving shaft in the system. For this purpose, a follower mechanism is necessary which would not impose any restraint on the driving shaft. One such follower mechanism has been discussed in this paper. The type of transducer used in the follower mechanism does not require a separate directional element when the driving shaft rotates in a reverse direction. (Author)

A74-20166 # The airship can meet the energy challenge. J. G. Vaeth (NOAA, National Environmental Satellite Service, Washington, D.C.). Astronautics and Aeronautics, vol. 12, Feb. 1974, p. 25-27.

It is suggested that lighter-than-air craft, in the form of very large airships, can be developed using nuclear propulsion. Such an

airship can be designed to move cargo pieces weighing a million pounds and more into difficult-to-reach places at energy expenditures matching available resources. Inherent environmental cleanliness and quiet would be important fringe benefits.

F.R.L.

A74-20167 # Zeppelins - Not again. W. P. Maiersperger. Astronautics and Aeronautics, vol. 12, Feb. 1974, p. 28-30.

Following a review of the performance of the 'Graf Zeppelin' over a period of years, aspects of zeppelin operation are discussed. Pressure height is basic to zeppelin operations. The zeppelin has proven itself a viable fair-weather mode of transportation, undoubtedly useful for certain social, scientific, and possibly military purposes. Technological recommendations would improve the safety record to a degree, but the dynamic conditions affecting structure and flight control must receive greater attention than they have in the past, and produce a revolutionary improvement over past performance records.

A74-20208 Nitinol as a fastener material. W. Schwenk and J. Huber (Grumman Aerospace Corp., Bethpage, N.Y.). (Society for the Advancement of Material and Process Engineering, National Conference, 5th, Kiamesha Lake, N.Y., Oct. 9-11, 1973.) SAMPE, Quarterly, vol. 5, Jan. 1974, p. 17-21.

The use of Nitinol for fastener applications is the principal area of discussion. Nitinol has the unique characteristic of undergoing a temperature-dependent phase transformation, which will cause significant changes in its configuration. These changes in shape offer the potential for developing fasteners which can expand radially for interference in a hole to improve structural fatigue, contract in length for clamping understructure, or form a rivet tail for blind fastening. The mechanical properties of the material, manufacturing techniques, and fastener design considerations are discussed.

(Author)

A74-20210 * Long range view of materials research for civil transport aircraft. M. D. Ardema and M. H. Waters (NASA, Ames Research Center, Moffett Field, Calif.). SAMPE, Quarterly, vol. 5, Jan. 1974, p. 28-38. 26 refs.

The impact of various material technology advancements on the economics of civil transport aircraft is investigated. Benefits of advances in both airframe and engine materials are considered. Benefits are measured primarily by improvements in return on investment for an operator. Materials research and development programs which lead to the greatest benefits are assessed with regards to cost, risk, and commonality with other programs. Emphasis of the paper is on advanced technology subsonic/transonic transports (ATT type aircraft) since these are likely to be the next generation of commercial transports.

A74-20213 Clean, bright, and dry. J. C. Bradley (Gulf Research and Development Co., Pittsburgh, Pa.). In: Manual on requirements, handling, and quality control of gas turbine fuel.

Philadelphia, Pa., American Society for Testing and Materials, 1973, p. 57-72.

It is the purpose of this paper to pinpoint some of the sources and types of fuel contamination and to outline precautions and procedures currently in use by the industry to preclude the possibility of contaminated fuel from reaching the turbine. In this connection, practices used in the aviation sector of the industry will be explored in detail since millions of gallons of jet fuel daily are being supplied to aviation turbines clean, bright, and dry with utmost reliability of product quality. Similar procedures applied to ground and marine units can assure dependable and economical operation.

(Author)

A74-20217 Survey of trace metals in distillate fuels. C. C. Ward (U.S. Bureau of Mines, Bartlesville Energy Research Center, Bartlesville, Okla.). In: Manual on requirements, handling, and quality control of gas turbine fuel. Philadelphia, Pa., American Society for Testing and Materials, 1973, p. 133-138; Discussion, p. 139-142.

Published information on the levels of trace metals in distillate fuels is scarce, so members of Section D02.E on Burner, Diesel, and Gas Turbine Fuel Oils of ASTM Committee D-2 on Petroleum Products and Lubricants agreed to pool information available in individual laboratories. Twelve laboratories furnished data on 408 samples of kerosines, diesel fuels, burner fuels, aviation turbine fuels, and gas turbine fuels. Data on trace metals content included that of sodium, potassium, vanadium, calcium, lead, magnesium, and copper. This survey to pool information available on the amounts of trace metals in random samples of distillate fuels does not lend itself to statistical treatment of the data. However, it does show that the level of trace metals in currently produced distillate fuels is much lower than the amounts presently allowed in ASTM Specification for Gas Turbine Oils (D 2880-71). (Author)

A74-20274 Art of the Stretch 8. I. C. Ramsey. Shell Aviation News, no. 419, 1973, p. 18-22.

A summary of extensive professional experiences with the DC-8-63 is given, covering the flight instrument systems, takeoff performance, and minimum control speed of the aircraft. Aircraft operation in adverse conditions, and the taxiing and takeoff procedures are discussed with particular attention to icing conditions.

A74-20275 VITAL II. L. Luce (Pacific Southwest Airlines, San Diego, Calif.), Shell Aviation News, no. 419, 1973, p. 26-29.

Discussion of Virtual Image Take-off and Landing (VITAL II) system which is operational on a Pacific Southwest Airlines Boeing 727 flight simulator in San Diego. The system is characterized as a revolutionary low-cost low-maintenance visual system which is superior to other simulators in providing a greater simulated training potential for pilots. Basic in the operation of this system is the capability of the simulator computer to transfer aircraft attitude and position data to its visual computer. The flexibility and versatility of the system are discussed.

V.Z.

A74-20280 * # Subsonic potential aerodynamics for complex configurations - A general theory. L. Morino (Boston University, Boston, Mass.) and C.-C. Kuo (NASA, Ames Research Center, Moffett Field, Calif.). AIAA Journal, vol. 12, Feb. 1974, p. 191-197. 33 refs. Grant No. NGR-22-004-030.

A general theory of subsonic potential aerodynamic flow around a lifting body having arbitrary shape and motion is presented. By using the Green function method, an integral representation for the velocity potential is obtained for both supersonic and subsonic flow. Under the small perturbation assumption, the potential any point in the field depends only upon the values of the potential and its normal derivative on the surface of the body. On the surface of the body, this representation reduces to an integro-differential equation relating the potential and its normal derivative (which is known from the boundary conditions) on the surface. The theory is applied to finite-thickness wings in subsonic steady and oscillatory flows.

(Author)

A74-20281 # Noise characteristics of a turbulent crosswind jet. J. E. Cole, III (Tufts University, Medford, Mass.). AIAA Journal, vol. 12, Feb. 1974, p. 198-202. 11 refs.

The turbulent flow which results when a circular jet issues into a crosswind is a noise source which is encountered during take-off and landing of certain types of V/STOL aircraft. The acoustic intensity

of the noise from this flow is calculated by extending the free jet model of Ribner to those crosswind jets for which the ratio of jet velocity to crosswind velocity is between 6 and 10. The extended model accounts for the noncircular cross section, the shortened potential core region, and the flow characteristics in the initial mixing region of the crosswind jet. The result of this analysis is an expression for the directivity function of the acoustic intensity from a crosswind jet of a V/STOL aircraft in flight. The maximum acoustic intensity is calculated to be in a direction which is slightly forward of the sidelines direction. (Author)

A74-20293 * # Attachment-line flow on an infinite swept wing. T. Cebeci (Douglas Aircraft Co., Long Beach, Calif.). AIAA Journal, vol. 12, Feb. 1974, p. 242-245. 7 refs. Contract No. NAS1-11623

A proposed method for calculating three-dimensional incompressible laminar and turbulent boundary layers is investigated with respect to its applicability to incompressible attachment line flow on an infinite swept wing. The calculation results obtained exhibit satisfactory agreement with experimental data.

M.V.E.

A74-20298 # Compressibility effects in unsteady thin-airfoil theory. R. K. Amiet (United Aircraft Research Laboratories, East Hartford, Conn.). AIAA Journal, vol. 12, Feb. 1974, p. 252-255. 9 refs. Research supported by the United Aircraft Corp.

Based on a previous solution of Miles (1950), an analytical expression is derived for the pressure, lift, and moment on a two-dimensional airfoil encountering a sinusoidal gust in compressible subsonic flow. The obtained solution appears to be a significant improvement over Osborne's (1973) analytical approximation and the original result of Miles (1950).

M.V.E.

A74-20311 Selection of the economically optimal blade profile for axial fluid flow engines (Auswahl des wirtschaftlich optimalen Schaufelprofils für axiale Strömungsmaschinen). A. Teufelberger. (Verein Deutscher Ingenieure, Tagung über strömungstechnische Probleme bei der Entwicklung von Strömungsmaschinen, Braunschweig, West Germany, Mar. 14-16, 1973.) VDI-Berichte, no. 193, 1973, p. 105-115, 5 refs. In German.

The efficiency and the price of a multistage, axial fluid flow engine depends significantly on the characteristics of the blade profile. In the selection of the blade profile for a steam engine, the blade dimensions must be chosen on the basis of the flow volume and the admissible stress data for the blade material. Questions concerning the relation between the mechanical and the aerodynamic characteristics are discussed. The general principles of the approach described are applied to a specific problem involving the high-pressure section of a steam turbine.

A74-20313 Aerodynamic problems of turbojet propulsion systems, repercussions on gas turbine development (Strömungstechnische Probleme der Turbostrahlantriebe, Rückwirkung auf die Gasturbinenentwicklung). H. G. Münzberg. (Verein Deutscher Ingenieure, Tagung über strömungstechnische Probleme bei der Entwicklung von Strömungsmaschinen, Braunschweig, West Germany, Mar. 14-16, 1973.) VDI-Berichte, no. 193, 1973, p. 139-147. 5 refs. in German.

Questions regarding the design of the entire propulsion system are considered, giving attention to the combustion temperature and gas turbine efficiency. Various types of supersonic compressors are discussed together with a high-pressure turbine, developments concerning the reduction of engine noise, and conditions in the case of

very high flight velocities. It is pointed out that the improvement of gasdynamic conversion characteristics has a much greater effect on thrust enhancement than the improvement of the characteristics of all other components.

G.R.

A74-20325 The state of development of axial pumps with supercavitating cascades (Entwicklungsstand der Axialpumpen mit vollkavitierender Beschaufelung /Superkavitation/). J. Voigt. (Verein Deutscher Ingenieure, Tagung über strömungstechnische Probleme bei der Ertwicklung von Strömungsmaschinen, Braunschweig, West Germany, Mar. 14-16, 1973.) VDI-Berichte, no. 193, 1973, p. 267-271. 7 refs. In German.

Questions of the economical employment of supercavitating pumps are considered together with details concerning the determination of a wing profile in the case of supercavitation. Theoretical relations regarding supercavitation in the case of a single wing cannot be satisfactorily applied to the cascade of an axial pump. Linearized cascade theories are employed for obtaining estimates concerning the relations between cavitation number and operational parameters. An approach reported by Hsu (1969) for the derivation of such estimates is considered.

A74-20422 Safety during automatic landing with poor visibility (La sécurité en atterrissage automatique en mauvaise visibilité). J.-P. de Beauchene (Délégation Ministérielle pour l'Armement, Paris, France). (Instituts de Navigation Européens et Américains, Congrès International, Hanover, West Germany, Oct. 2-5, 1973.) Navigation (Paris), vol. 22, Jan. 1974, p. 31-46. In French.

Review of the operational and safety objectives which must be attained by an automatic all-weather landing system, including some examples of such systems under study or actually realized. After briefly reviewing certain principles of flight mechanics and automatic piloting and also briefly describing the ILS system used to define the approach trajectory, the various categories of all-weather landing are cited, as well as the possible procedures that can be followed in the event of automatic pilot failure. A number of recently developed automatic all-weather landing systems are described, including the Sud-Lear system mounted on the Caravelles of Air-Inter, a monitored system used on the Dassault-Mercure aircraft to be flown by Air-Inter, the double monitored system employed on the Concorde, and a quadruple system to be used on the Airbus A 300 B. A.B.K.

A74-20478 A fatigue failure criterion for fiber reinforced materials. Z. Hashin and A. Rotem (Technion - Israel Institute of Technology, Haifa, Israel). *Journal of Composite Materials*, vol. 7, Oct. 1973, p. 448-464, 7 refs. Contract No. F44620-71-C-0100.

A simple fatigue failure criterion for unidirectionally fiber reinforced laminae under oscillatory states of combined plane stress has been established. The criterion is expressed in terms of three S-N curves which are easily obtained from fatigue testing of off-axis unidirectional specimens under uniaxial oscillatory load. An extensive series of tests have demonstrated good agreement of the failure criterion with experimental data. (Author)

A74-20498 Failure of helicopter turbines due to the employment of a steel in a corrodible condition in combination with a design unsuited for the material (Zerstörung von Hubschrauberturbinen durch Einsatz eines Stahles in korrosionsanfälligem Zustand bei gleichzeitig nicht werkstoffgerechter Konstruktion). G. Lange (Braunschweig, Technische Universität, Braunschweig, West Germany). Zeitschrift für Werkstofftechnik, vol. 5, Jan. 1974, p. 9-13. In German.

A74-20522 # Explanations and remarks on standards for flight mechanics (Vysvetleni a poznamky k normam pro mechaniku letu). K. Jansa. *Zpravodaj VZLU*, no. 4, 1973, p. 17-22. In Czech,

Brief review of the history and manner of preparation of the International Standards for Flight Mechanics within the framework of the International Standard Organization. The main points of Rebuffet's comments on the results thus far obtained by Subcommission SC 3 of this organization, which develops these standards, are summarized. Finally, a brief review is given of the contribution of Czechoslovakia to the work of this subcommission.

A74-20523 # Technology of production of sandwich panels with aluminum honeycomb cores (Technologie vyroby sendvicu s hlinikovym vostinovym jadrem). Z. Smojkal. *Zpravodaj VZLU*, no. 4. 1973. p. 23-31. In Czech.

Review of the various methods of bonding used in the production of sandwich panels with aluminum honeycomb cores. These methods, which include bonding on a vacuum table, bonding by pressing using a male die and a female die, bonding in a curing oven using a pressing tool, bonding in individual heated pressing tools, and bonding in an autoclave, are described and evaluated from various standpoints, for example, the applicability of various adhesives, suitability for series production, economy, etc. A brief description is given of the bonding tools, and the technological procedure for bonding sandwich panels is indicated. Special attention is paid to the method of production of sandwich panels with aluminum honeycomb cores and laminated skins.

A.B.K.

A74-20524 # Requirements on the purity of aircraft fuels (Pozadavky na cistotu leteckych paliv). J. Krotky. *Zpravodaj VZLU*, no. 4, 1973, p. 33-38. In Czech.

Review of the problems connected with ensuring and monitoring the purity of aircraft fuels, particularly fuels for jet engines. Particular attention is paid to impurities which do not arise as a result of chemical changes but enter the fuel from the environment on its way from the factory to the consumer. The effects of mechanical impurities, water, microorganisms, and surface-active materials on aircraft fuels are cited, and methods of preventing these impurities from getting into the fuels are indicated.

A.B.K.

A74-20548 Various mechanisms applied to the Concorde main landing gear (De divers mécanismes appliqués au train principal de 'Concorde'). P. Lallemant (SNECMA, Division Hispano-Suiza, Bois-Colombes, Hauts-de-Seine, Française de Mécanique, 1st Quarter, 1973, p. 29-32. In French.

Description of the design and operation of the systems comprising the Concorde main landing gear. The retraction system employed is of articulated crank shaft/connecting rod type and rests on the caisson at a point which is eccentric with respect to the pivoting axis of the landing gear during the retraction. The locking system employed features an internally locking telescopic strut which combines in a single mechanism the maneuver drive element and the element resisting the landing stresses. The mechanism initiating retraction is located to one side of the landing gear and includes a jack, a pendulum-type connecting rod, and a guide bar arranged in such a way as to ensure optimal efficiency. The mechanism developed for the delicate machining of the bulb located in the upper part of the landing gear shaft is also described. A,B.K.

A74-20595 Display systems - An airborne look ahead. Mr. Braid (Ferranti, Ltd., Edinburgh, Scotland). *Optical Spectra*, vol. 8, Feb. 1974, p. 35, 36.

Description of the types of airborne optical display systems designed for use on modern military aircraft. Details are given on a head-up display, a head-down display, and a helmet-mounted display. Considerable progress is noted in the development of airborne information displays combining optics and electronics in the conversion of invisible signals.

V.Z.

A74-20624 Urban air traffic and city planning: Case study of Los Angeles County. M. C. Branch (Southern California, University, Los Angeles, Calif.). New York, Praeger Publishers, 1973. 117 p. 200 refs. \$15

It is pointed out that city planning as it has been practiced in the United States for the past half century can no longer cope with forthcoming urban air travel, which already has caused serious disruption and damage to the larger cities. Much more effective institutions for planning cities and metropolitan regions must be established. A number of recommendations for improving the air traffic situation in metropolitan areas are proposed.

V.P.

A74-20662 Winter Simulation Conference, Washington, D.C., January 14-16, 1974, Proceedings. Volume 2. Conference sponsored by AIIE, ACM, IEEE, ORSA, S.H.A.R.E., SIGSIM, SCS, and TIMS. Edited by H. J. Highland, Elmont, N.Y., Association for Computing Machinery, Inc., 1974, 397 p. Price of two volumes, \$25.

Aspects of mission performance simulation are discussed together with an application of parametric time series in simulation modeling, an aquatic simulation with threshold conditions, and a mathematical formulation of discrete event systems. Other subjects considered include experiments in simulating OS/360 from performance data, market strategy via simulation, the validation of computer simulation models using parametric time series analysis, the simulation of passenger movements through a transit station, and a probabilistic evaluation of fallout effects associated with nuclear air bursts. Ratio estimates in Monte Carlo simulations are investigated along with the simulation of air traffic, a statistical response surface generator design, and a stimulus-driven model of concept identification.

G.R.

A74-20663 Air traffic control scheme through simulation.
J. C. Yu (Virginia Polytechnic Institute and State University, Blacksburg, Va.) and S. A. Akhand (Stockton State College, Pomona, N.J.). In: Winter Simulation Conference, Washington, D.C., January 14-16, 1974, Proceedings. Volume 2. Elmont, N.Y., Association for Computing Machinery, Inc., 1974, p. 551-557. 12 refs. NSF Grant No. GK-30325.

A description is given of a large-scale simulation model of an airport terminal area. The model can be used for the analysis of the stochastic air traffic control problem. The complex interactions among the various components of the ATC system are taken into account by the model. The system approach used makes it possible to determine also the overall effect of ATC performance as a consequence of any proposed change. The simulation model has been subjected to a number of tests for complete validation. The test results indicate that the discrete event modeling of system effects can adequately simulate air-terminal operations.

G.R.

A74-20754 # SAAB digital flight control. M. A. Mathews, Jr. (Honeywell, Inc., Government and Aeronautical Products Div., Minneapolis, Minn.). American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-26. 17 p. Members, \$1.50; nonmembers, \$2.00.

Description of the development and verification testing of a digital automatic flight control system (AFCS) for the SAAB AJ-37 (Viggen) aircraft. The development of the digital system evolved

from the analog system originally designed and developed for the AJ-37 aircraft. The digital system, developed specifically for this test demonstration, consists of the digital mechanization of one of the two analog channels in the original command augmentation system. The pilot can select either the digital channel, the analog channel, or both. The objective of this program was to establish with a degree of confidence approaching certainty that a digital AFCS can provide performance equivalent to an analog AFCS. This objective was achieved with a high degree of success as demonstrated by the results of the flight test program. (Author)

A74-20755 * # A digital fly-by-wire technology development program using an F-8C test aircraft. C. R. Jarvis (NASA, Flight Research Center, Edwards, Calif.). American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-28. 11 p. 8 refs. Members, \$1.50: nonmembers. \$2.00.

A digital fly-by-wire flight control system has been installed in an F-8C test airplane and has undergone extensive ground and flight testing as part of an overall program to develop digital fly-by-wire technology. This is the first airplane to fly with a digital fly-by-wire system as its primary means of control and with no mechanical reversion capability. Forty-two test flights were made for a total flight time of 57 hours. Six pillots participated in the evaluation. This paper presents an overview of the digital fly-by-wire program and discusses some of the flight-test results. (Author)

A74-20760 # Reduction of noise from small turbopropulsion engines. P. A. Shahady, C. A. Lyon (USAF, Aero Propulsion Laboratory, Wright-Patterson AFB, Ohio), R. N. Tedrick, and R. W. Heldenbrand (AiResearch Manufacturing Company of Arizona, Phoenix, Ariz.). American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-59. 18 p. 20 refs, Members, \$1.50; nonmembers, \$2.00. Contract No. F33615-71-C-1457.

Summary of an exploratory research effort to develop the technology base necessary to effectively reduce the noise signature of existing small turboprop and turbofan engines to acceptable levels for fow-altitude reconnaissance/surveillance and special operations missions. Emphasis was placed on the application of sound attenuation techniques rather than on internal engine design changes. The principal results of the program were the development of (1) a comprehensive bank of small-engine/component-noise data relatively free of extraneous noise sources, (2) simple and accurate smallengine/component-noise prediction methods for use in propulsion system design tradeoff studies, (3) simplified analysis techniques to design small-engine noise suppression hardware and to predict the attenuation for typical installations, and (4) preliminary design methods to assess engine performance and weight penalties associated with typical suppression techniques. (Author)

A74-20774 # Unsteady viscous flow on oscillating airfoils. W. J. McCroskey (U.S. Army, Air Mobility Research and Development Laboratory, Moffett Field, Calif.) and J. J. Philippe (ONERA, Châtillon-sous-Bagneux, Hauts-de-Seine, France). American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-182. 12 p. 31 refs. Members, \$1.50; nonmembers, \$2.00.

Incompressible laminar and turbulent flows over flat plates and airfoils have been investigated numerically and experimentally in unsteady flow conditions. Important differences were found between laminar and turbulent flat plate flows over a wide range of oscillation frequencies. Also, the importance of unsteady effects on laminar boundary layers was found to diminish rapidly with increasing

longitudinal pressure gradients, whereas turbulent separation on airfoils was significantly affected by oscillatory motion when the incidence approached the stall angle. The calculated hysteresis in turbulent separation followed well-known trends of dynamic stall delay, but the results failed to indicate some of the important features of dynamic stall that were observed. (Author)

A74-20775 * # Effect of configuration variation on externally blown flap noise. R. G. Dorsch, J. H. Goodykoontz, and N. B. Sargent (NASA, Lewis Research Center, V/STOL and Noise Div., Cleveland, Ohio). American Institute of Aeronautics and Astronautics, Aerospace Sciences Meeting, 12th, Washington, D.C., Jan. 30-Feb. 1, 1974, Paper 74-190. 33 p. 26 refs. Members, \$1.50; nonmembers, \$2.00.

The sensitivity of flap interaction noise to variations in engine-under-the-wing externally blown flap geometry was investigated with a large cold-flow model. Both two- and three-flap wing sections (7-ft chord) with trailing flap angles up to 60 deg were employed. Exhaust nozzles included coaxial, plug, and 8- and 13-in.-diam conical configurations. These nozzles were tested at two positions below the wing {19-1/4 and 29-1/4 in.}. The effects of these geometry variations on noise level, directivity, and spectral shape are summarized in terms of exhaust flow parameters evaluated at the nozzle exit and at the flap impingement station. The results are also compared with limited flap noise data available from tests using real engines. (Author)

A74-20825 Engine condition monitoring - The Alitalia approach. E. Eula and G. Capodagli (Compagnia Nazionale Alitalia, Rome, Italy). Shell Aviation News, no. 420, 1973, p. 24-29.

Manual recording by flight crews of a limited number of engine parameters from standard flight deck instrumentation, and automatic recording by Airborne Integrated Data System of certain number of system and engine parameters are described as the two methods adopted by Alitalia for collecting information on the behavior of aircraft engines. The qualities of both methods are evaluated and experiences with them to date are discussed. Flight Data Entry Panel, Flight Data Acquisition Unit, Performance/Maintenance Recorder, and Digital Flight Data Recorder are indicated as ingredient of hardware configurations in the continuing development of engine condition monitoring at Alitalia.

A74-20834 // Advanced composites. A. M. Lovelace {USAF, Systems Command, Andrews AFB, Md.). American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display, 10th, Washington, D.C., Jan. 28-30, 1974, Paper 74-242. 12 p. 12 refs. Members, \$1.50; nonmembers, \$2.00.

Numerous examples of composites exist in nature, For the case of filamentary composites, an example can be found in bamboo. Composites were used for aerospace vehicles since their birth. The Mosquito aircraft represents a milestone in the development of an all-composite aircraft. The application of glass fiber-polyester composites to Air Force vehicles was made in numerous cases during and shortly after World War II. Modern aerospace applications of glass fiber include the fabrication of the Polaris missile casing through filament winding. An important factor for a further broadening of the use of plastics is an increase in the strength of the composites. The theory of composites is considered along with present technological developments and future possibilities for the employment of composites.

A74-20836 # Aircraft life cycle profitability - The manufacturer's challenge. R. E. Brown and J. J. Italiane (Boeing Commercial Airplane Co., Seattle, Wash.). American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display, 10th,

Washington, D.C., Jan. 28-30, 1974, Paper 74-280. 15 p. Members, \$1,50; nonmembers, \$2.00.

The ways in which the aircraft manufacturer influences the profitability of the airplane during the life cycle is shown, starting with the design and construction phases, and terminating with the aircraft's useful life. It is shown that the manufacturer influences all the investment cost, somewhat less than half the airplane operating cost, a small part of traffic costs, and most of the useful life parameter. He also has a substantial influence on the earning capability.

V.P.

A74-20837 # Aircraft life cycle profitability - The operator's challenge. J. G. Borger and L. H. Allen (Pan American World Airways, Inc., New York, N.Y.). American Institute of Aeronautics and Astronautics, Annual Meeting and Technical Display, 10th, Washington, D.C., Jan. 28-30, 1974, Paper 74-281. 9 p. Members, \$1.50; nonmembers, \$2.00.

Two fundamental areas in which the operator can influence aircraft life cycle profitability are examined. The first area includes aircraft design goals, route performance, investment cost, operating costs, growth prospects, passenger appeal, technical specifications, and maintenance requirements. The second area includes operating goals, service quality, revenue production, aircraft life, utilization, and reliability. The fundamentals of good aircraft design are outlined, and the importance that manufacturer and operator adhere to these fundamentals is emphasized.

A74-20900 // Correlational ground speed meters and drift indicators of flight vehicles (Korreliatsionnye izmeriteli putevoi skorosti i ugla snosa letatel'nykh apparatov), M. K. Borkus and A. E. Chernyi. Moscow, Izdatel'stvo Sovetskoe Radio, 1973, 169 p. 44 refs. In Russian.

A procedure is developed for flight-vehicle ground speed and drift measurements by determining the correlation characteristics of radio signals reflected from the ground and received by diversity antennas positioned along the axis of the flight vehicle antenna. Theoretical basis of this technique is set forth and the designs of suitable ground speed meters and drift indicators are discussed. The functional characteristics of these instruments and their errors are evaluated. Practical applications of different types of these instruments are considered.

V.Z.

A74-20904 # Noise suppressing devices (Shumoglushashchie ustroistva). A. S. Pogodin. Moscow, Izdatel'stvo Mashinostroenie, 1973, 176 p. 14 refs. In Russian.

Numerous problems associated with noise suppression in industrial plants, aircraft plants, engine test stands, at airports, etc. are discussed. Vibration damping materials, soundproofing materials, and acoustic screens are examined, along with methods of suppressing noise in metal working and assembly shops, aircraft noise, and noise produced by compressors, turbocompressors, and stationary gas turbines.

V.P.

A74-20905 # Reliability of aircraft navigation computers (Nadezhnost' samoletnykh navigatsionno-vychislitel'nykh ustroisty). Ts. N. Lipchin and L. Ts. Lipchin. Moscow, Izdatel'stvo Mashinostroenie, 1973, 196 p. 57 refs. In Russian.

Some basic problems involved in improving the reliability of on-board complexes of navigation instruments and the reliability of navigation computers are examined, and a procedure for determining these reliabilities is developed. Particular attention is given to the current trends of improving the reliability of navigation computers both during their serial production and service life, and to engineering methods of determining the reliability of complex systems. Approaches to the solution of optimal reliability problems are examined.

A74-20919 # Reliability of adaptive systems (Nadezhnost' adaptivnykh sistem). G. K. Moskatov. Moscow, Izdateľstvo Sovetskoe Radio, 1973, 104 p. 87 refs. In Russian.

Methods of evaluating the reliability of adaptive flight control systems are examined. The stabilization and control of flight vehicles are discussed from the standpoint of the theory of queues, as a process of servicing 'impatient customers.' The ability of adaptive systems to compensate for various parametric and structural infractions is demonstrated. The theory of semi-Markov processes is used to construct a mathematical reliability model for adaptive feedback control systems, with allowance for a random time required for adaptation. The failure-proof characteristics of a hypothetical adaptive automaton are calculated on a computer.

V.P.

A74-20938 Reliability and choosing number of prototypes. A. S. Pollack and R. A. Nulk (U.S. Army, Office of the Chief of Research and Development, Washington, D.C.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 84-90 5 refs

The application of a reliability growth model to a helicopter development program is discussed. Various options are considered with respect to the number of prototypes to be procured for each phase of the development. For each option the amount of calendar time to be consumed by the test program is determined. The information is used to estimate the effect of each option upon the R and D costs. The analysis indicates that it would be prudent to plan a program which provides for six prototypes that can be used for flight testing by each contractor. The appropriate distribution of the test resources between reliability growth and reliability demonstration testing is also considered.

G.R.

A74-20944 Some experiences from the use of an LCC approach. H. Ebenfelt (Systecon AB, Stockholm, Sweden) and S. Ogren (Swedish Air Materiel Administration, Stockholm, Sweden). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 142-146

The LCC approach discussed in this paper has been developed to suit a specific need, determined by factors such as the competitive situation, the time horizon and associated risks, program and contract characteristics. These factors and their implications on techniques and procedures used during different phases of system acquisition are reviewed. A brief description of the approach is included as it applies to conceptual studies, source selection and contracting. The experience thus gained is finally summed up in statements pointing at present problem areas but also indicating advantages. (Author)

A74-20945 Plan for developing structural criteria for composite airframes. S. D. Manning and G. H. Lemon (General Dynamics Corp., Convair Aerospace Div., Fort Worth, Tex.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 155-162, 18 refs. Contract No. F33615-72-C-1066. AF Project 4364.

A plan is presented for developing structural criteria specifically for advanced composite airframes. This plan complements the new MIL-STD-1530 specification. Details of the proposed plan and critical issues are discussed in terms of MIL-STD-1530 requirements. Implementation of the proposed plan and problem areas are discussed. (Author)

A74-20950 Reliability demonstration testing using failure-free trials. H. S. Hammer (Rockwell International Corp., Autonetics Div., Anaheim, Calif.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers. Inc., 1974, p. 201-205.

It is suggested that reliability demonstration testing be conducted in terms of a failure-free test period conducted at the conclusion of, or as an integral part of burn-in, on each deliverable equipment. Compliance with reliability requirements is established by specifying a maximum number of allowable trials (attempts to complete the failure-free test period) in a consecutively produced lot or quantity of systems. This suggested failure-free reliability demonstration test method has the advantage of assuring that each equipment receives a minimum burn-in, while providing added confidence because reliability determinations are based on test data from all equipments produced and not just a small sample. A real-time test reject or accept decision can also be made directly by the on-site personnel. This is because these decisions are based on the quantity of successful and unsuccessful failure-free trials and not on relevant failure determinations.

(Author)

A74-20952 Simulation of dispatch reliability for a fleet of large commercial aircraft. M. O. Locks (Oklahoma State University, Stillwater, Okla.) and G. L. Pauler (Los Angeles, Loyola University, Los Angeles, Calif.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 226-228.

For a fleet of large commercial aircraft, management's objectives include attaining a prespecified dispatch reliability (DR), a measure of the radio of departures within a stated time of scheduled departure to total departures. Data from the first 18 months of revenue operation are used to assess and predict DR for future periods. Goodness-of-fit analysis shows the delay times for departures delayed six minutes or more tend to fit lognormal distributions. The estimated distributions were used to assess DR both for historical data and future periods by simulation. The results show that the delay time is too large to meet management's objectives. (Author)

A74-20954 Equipment procured reliability and real-life survival. O. Markowitz (U.S. Navy, Aviation Supply Office, Philadelphia, Pa.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings.

New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 249-255. 6 refs.

Recommendations are made for improving communications between suppliers and users of equipment in the area of reliability. It is concluded that the hazards in real life equipment flow and end use do not compare to those inherent in equipment laboratory verification of failure rate. Thus any translation of laboratory or specified failure rate as a direct expectation of end use failure rate is inadequate. There is much needed in the way of the operator's understanding of what is required from contractors in the context of reliability and, as well, much is needed in contractor's understanding of the real life equipment flow and hazards of survival.

T.M.

A74-20967 Hazard function monitoring of airline components. M. L. Shooman (New York, Polytechnic Institute, Brooklyn, N.Y.) and S. Tenenbaum (Aero Data, Inc., Syosset, N.Y.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 383-390.

As part of their reliability programs, all of the major U.S.

airlines systematically collect component failure data. These data are analyzed in various ways and to varying degrees. One of the important methods is hazard function analysis which is done by computer for dozens to hundreds of components. This paper discusses a hazard function monitoring system which was designed to aid the reliability engineer by providing automated smoothing and plotting of results and a capability for computer recognition of problem components and exception reporting. The mathematical pattern recognition techniques used in this hazard monitoring system provide parameters which accurately characterize a wide range of hazard data. These parameters describe a more flexible hazard model than that conventionally used in large reliability data collection systems (e.g., FARADA, GIDEP), yet can still be compactly solved and easily interpreted.

A74-20969 DC-10 avionics parts reliability in review. R. S. Babin (Douglas Aircraft Co., Long Beach, Calif.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 403-408.

The McDonnell Douglas DC-10 aircraft program has demonstrated the effectiveness of a number of reliability and quality engineering controls and disciplines. Notable among them are several key controls on electrical, electronic, and electromagnetic parts in the avionics systems. A qualitative review of those parts controls is presented, utilizing DC-10 case histories (actual part-failure problems) as a basis for discussion and evaluation of the relative effectiveness of the controls. The controls that have shown most room for improvement, judged by the impact of their deficiencies on fielded equipment reliability, are: (1) part-failure reporting, analysis, and corrective action, (2) multiple-source part procurement, and (3) the designation and control of microcircuit part quality. (Author)

A74-20974 Flight test safety analysis of the all weather landing system /AWLS/ program. L. S. Gephart (Dayton, University, Dayton, Ohio) and R. H. Keegan (USAF, Flight Dynamics Laboratory, Wright-Patterson AFB, Ohio). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 436-442. FAA-USAF-supported research.

The ultimate objective of this joint FAA-USAF program is to obtain Category III approach and landing experience in actual weather with a large turbojet aircraft. This effort entails testing and evaluating all elements of the Category III air-ground instrument landing system within a well rehearsed and controlled environment. This paper details the total equipment system and its configuration for both primary and back up operational/experimental modes. Advanced displays employing new concepts and design features are part of the augmented aircraft configuration. Hardware reliability, maintenance, and planned equipment performance monitoring procedures are analyzed in conjunction with specified flight test operational procedures to establish base line performance and overall system safety. The analysis includes real time validation procedures and associated transitional modes to compensate for both hardware failures and electromagnetic environmental interference conditions. (Author)

A74-20987 Risk analysis - A program management tool. J. D. Gault (Boeing Co., Wichita, Kan.). In: Annual Reliability and Maintainability Symposium, Los Angeles, Calif., January 29-31, 1974, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1974, p. 548-551.

Investigation of the adaptability of risk analysis methodology to evolutionary situations such as environmental problems. Techniques

presently used to evaluate airplane fatigue risks are shown to be applicable to any situation having an inherent risk which increases with time but may be countered by periodic application of corrective measures. Control of our environment, mass transportation, and consumer protection are among the problems that fall into this category. The investigation results indicate that risk analysis provides an approximate answer to the right problem by tying together the interrelated influences in a complex system.

M.V.E.

A74-21104 The high subsonic flow around a two-dimensional aerofoil with a trailing edge control surface. D. Nixon (Queen Mary College, London, England). Aeronautical Quarterly, vol. 24, Nov. 1973, p. 273-283, 5 refs.

The effect of the operation of a 15% trailing edge control surface on the flow around a two-dimensional airfoil in a high subsonic shock-free condition is investigated, using the integral equation method developed by Nixon and Hancock (1972). The effect of retaining the nonlinearities in the transonic potential equation is to increase considerably the magnitude of the pressures over the front part of the airfoil in comparison with the pressure found using a modified linearized theory in which significant second-order terms in the boundary conditions are retained. The magnitude of the lift coefficient and the pitching moment coefficient are increased by 10 to 15% over the values found using the modified linear theory, and by 20% over the values found using standard linear theory. However, the magnitude of the hinge-moment coefficient is decreased by the order of 20% compared with the modified linear values and by 30% when compared to the standard linear values.

(Author)

A74-21105 The influence of non-linear longitudinal aerodynamic characteristics on the power spectral response of aircraft to atmospheric turbulence. P. A. T. Christopher (Cranfield Institute of Technology, Cranfield, Beds., England) and J. M. H. Dunn (Delaney Gallay, Ltd., London, England). Aeronautical Quarterly, vol. 24, Nov. 1973, p. 284-294. 8 refs.

A74-21230 # Conceptual options for future aircraft-ship operations. J. J. Mulquin (U.S. Naval Air Systems Command, Washington, D.C.). American Institute of Aeronautics and Astronautics and Society of Naval Architects and Marine Engineers, Advanced Marine Vehicles Conference, San Diego, Calif., Feb. 25-27, 1974, AIAA Paper 74-300. 11 p. 32 refs. Members, \$1.50; nonmembers, \$2.00.

Mounting new pressures are forcing naval aviation away from classic equipment, tactics and procedures that have characterized it for some fifty years. They include cost, manning, performance and a host of factors relating to the U.S. Navy's future role in over-all national policy. These dynamic shifts in emphasis introduce, simultaneously, challenges to be overcome and opportunity to be exploited. This paper explores developing U.S. Navy air mission alternatives, attempts to establish logical and practical links with advanced marine vehicle technology, and describes relationships that bear directly upon the composition, character and quality of naval aviation in the crucial 1980s.

A74-21291 # Wind modification over the flight decks of high-speed ships. R. D. Murphy {U.S. Navy, Naval Ship Research and Development Center, Bethesda, Md.}. American Institute of Aeronautics and Astronautics and Society of Naval Architects and Marine Engineers, Advanced Marine Vehicles Conference, San Diego, Calif., Feb. 25-27, 1974, AIAA Paper 74-301. 8 p. Members, \$1.50; nonmembers, \$2.00.

This paper reports a very limited development effort for an aerodynamic shield to be used during flight operations aboard

high-speed ships. New concepts in ship design with soon be capable of producing deck wind intensities too great for personnel and equipment exposure, yet, aircraft take-off and landing performance could benefit from any increased wind over deck. Modification of the deck winds might allow all preflight/post-flight support necessary. A very limited wind-tunnel evaluation suggests that an effective shield could be developed. Subjected during test to a tunnel wind in excess of 90 knots, the shield modified the local deck winds significantly. A large shielded space was produced. Although the shield is not yet optimized and more development is needed, the simplicity of the aerodynamic principles involved forcasts considerable elasticity in both effectiveness and application.

T.M.

A74-21292 # A new aircraft/ship mating system. K. de Booy (Boeing Aerospace Co., Seattle, Wash.). American Institute of Aeronautics and Astronautics and Society of Naval Architects and Marine Engineers, Advanced Marine Vehicles Conference, San Diego, Calif., Feb. 25-27, 1974, AIAA Paper 74-303. 6 p. Members, \$1.50; nonmembers, \$2.00.

Studies of high performance vertical takeoff fighters designed to operate from small ships not equipped with catapults and arresting gear indicate that the tail sitter is the most efficient airplane concept to perform intercept missions. Intercept and air-to-air combat missions reduce takeoff thrust-to-takeoff weight ratios consistent with vertical takeoff requirements. In the tail sitter design, the weight associated with making all of the thrust available for both takeoff and mission performance is minimized. A stabilized landing gantry, aircraft handling, storage and maintenance concept was developed which is a radical departure from the conventional. The resultant airplane/ship system offers potential improvements in aircraft performance and possibly some attractive options in ship design. (Author)

A74-21293 # The design application of aircraft securing and traversing systems to the surface effect ship. C. A. Toche (Litton Systems, Inc., Van Nuys, Calif.). American Institute of Aeronautics and Astronautics and Society of Naval Architects and Marine Engineers, Advanced Marine Vehicles Conference, San Diego, Calif., Feb. 25-27, 1974, AIAA Paper 74-304. 8 p. Members, \$1.50; nonmembers, \$2.00, Contract No. N00024-73-C-0907.

A74-21294 # Aircraft/ship interface problems - The U.S. Navy's program. J. R. Smith (U.S. Naval Air Systems Command, Washington, D.C.) and W. S. Mitchell (Washington Technological Associates, Inc., Rockville, Md.). American Institute of Aeronautics and Astronautics and Society of Naval Architects and Marine Engineers, Advanced Marine Vehicles Conference, San Diego, Calif., Feb. 25-27, 1974, AIAA Paper 74-305. 10 p. 13 refs. Members, \$1.50; nonmembers, \$2.00.

This paper provides an overview of the U.S. Navy helicopter compatibility program on nonaviation ships. It presents a brief history and discussion of the elements and evolution of aviation facilities along with the deficiencies aboard existing ships and the problems in expediting their correction. This is followed by a discussion of some of the major interface problem areas confronted in integrating an effective aircraft-ship system.

T.M.

A74-21320 General Dynamics lightweight fighter. C. Gilson. Flight International, vol. 105, Feb. 7, 1974, p. 173-176.

According to the regulations of the contract for two prototype YF-16s complete responsibility for design resides with General Dynamics and no detailed military specifications have to be met. The YF-16 shows its advanced technology in several areas, aerodynamically, in its systems, materials, and powerplant. A maximum speed of Mach 2.2 can be reached. The first YF-16 made an unscheduled first flight on January 20 at Edwards Air Force Base, Calif. G.R.

A74-21335 International Conference on Cybernetics and Society, Boston, Mass., November 5-7, 1973, Proceedings. Conference sponsored by the Institute of Electrical and Electronics Engineers. New York, Institute of Electrical and Electronics Engineers, Inc., 1973, 402 p. Members, \$15.; nonmembers, \$20.

The subjects examined are related to information and education, health care delivery systems, man-machine systems, environmental quality, pattern recognition, transportation, and applications of adaptive techniques. Other areas considered include communication gaps, man in an automated ATC environment, technology and the community, urban emergency services, biocybernetics, optical control theory in economic models, and system theory and applications. Topics in the field of decision analysis are also explored together with subjects in the areas of computers and modeling, pattern discovery, and artificial intelligence.

G.R.

A74-21336 A direct procedure for partitioning scanning workload with a flight director. W. F. Clement, L. G. Hofmann, and D. Graham (Systems Technology, Inc., Princeton, N.J.). In: International Conference on Cybernetics and Society, Boston, Mass., November 5-7, 1973, Proceedings. New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 38-43. 9 refs. Contract No. F33615-71-C-1349.

Recent experimental eye scanning measurements from simulated approaches in a flight-like cockpit representing a contemporary jet transport have made it possible to simplify the procedure for predicting the partition of the pilot's scanning workload required for monitoring and controlling a task with status displays and a flight director. When there is but a single director control display, the new procedure eliminates iteration in the preliminary design computations. The preliminary design computations are based on predictions of closed-loop input-correlated errors in displayed variables with respect to the trimmed flight values. Also included are methods for predicting multiloop error coherence, and for correcting the predicted partition of scanning workload when the pilot's scanning remnant contribution is significant. (Author)

A74-21338 * Digital adaptive model following control. G. Alag, J. Rondot, and H. Kaufman (Rensselaer Polytechnic Institute, Troy, N.Y.). In: International Conference on Cybernetics and Society, Boston, Mass., November 5-7, 1973, Proceedings.

New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 104-106. Grant No. NGR-33-018-183.

Development of an implementable digital adaptive control system requires a control law that can be efficiently adjusted during system operation and an identification algorithm that is capable of supplying parameter estimates at an accuracy and rate specified by the controller characteristics. To this effect a control law has been derived based upon the minimization of a weighted combination of the instantaneous squared error between the states of a linear plant and model at the next stage and the present control energy. The result is a control signal that is a linear combination of plant states, model states, and any model inputs. Explicit formula are available for computing the pertinent gains. To illustrate the utility of such a control law, its application to typical linearized lateral aircraft dynamics is currently being considered.

A74-21340 The automatic aircraft guidance law for midair collision avoidance. S.-C. Huang and A. Joshi (Syracuse University, Syracuse, N.Y.). In: International Conference on Cybernetics and Society, Boston, Mass., November 5-7, 1973, Proceedings.

New York, Institute of Electrical and Electronics Engineers, Inc., 1973, p. 133-138. 6 refs.

The air traffic control problem is a complicated yet important problem which needs to be solved by the interdisciplinary approach of modern technology. In this paper we obtain the automatic

optimal guidance law and the guided optimal trajectories for two aircraft to avoid mid-air collision in the terminal area. The paper consists of two parts. The first part formulates the two aircraft collision problem into the framework of control theory. In the second part, the maximum principle is used to obtain a numerical procedure. Two cases of head-on collision were simulated by a computer APL Program. (Author)

A74-21641 # Simulation studies of an airport noise silencer (Badania modelowe lotniskowego tlumika halasu). A. Kowalewicz and W. Jarzebowski. *Instytut Lotnictwa, Prace,* no. 55, 1973, p. 3-20 fi refs. In Polish

Description of gasdynamic and acoustic measurements performed with two prototype versions of mufflers designed to suppress noise emission from the exhaust of jet aircraft engines in operation at or near airports. The two prototypes resulted from preliminary gasdynamic calculations and performance analyses. Structural details are illustrated, and results of compressed-air tests are given in graphs illustrating velocity distributions and exhaust noise spectra. T.M.

A74-21705 Helicopter windlass rescue with the Alouette III (Die Hubschrauberwindenbergung mit der Alouette III). E. Jenny. Wehrmedizinische Monatsschrift, vol. 18, Feb. 1974, p. 39-45. In German

The rescue of persons injured by accidents in high mountains from a hovering helicopter by means of a cable winch was first carried out in 1970 in Austria by the Austrian Bundesheer (Federal Army). The technique of helicopter windlass rescue and the necessary rescue apparatus have been further developed and improved since then, in association with the Austrian Mountain Rescue Services. In order to guarantee the reliability of this type of rescue, a cadre of air-rescue men was continuously trained by army personnel.

A74-21726 The Fairchild Industries A-10 - Designed for close air support. J. P. Geddes. *Interavia*, vol. 29, Feb. 1974, p. 119-122.

As a result of the experience provided by the war in Vietnam and of studies concerning the situation in Europe, prototypes of an aircraft for close air support were built. On Jan. 18, 1973 it was announced that Fairchild's A-10 had won the competition. A contract for ten preproduction aircraft was awarded and preparatory steps leading to the production of 600 A-10s beginning in 1975 were considered. Details of A-10 aircraft design are discussed together with aspects of the A-10 systems, questions of survivability, maintenance considerations, and problems of procurement. G.R.

A74-21727 The HS.146 - A four-jet feeder-liner. *Interavia*, vol. 29, Feb. 1974, p. 127-129.

The passenger cabin of the standard aircraft (HS.146-100) is 15.42 m long and 3.20 m wide at floor level. The 'standard' configuration provides seats for 71 passengers. For use on high-density routes, Hawker Siddeley is offering a stretched Dash-200 version which provides better operating economics. Power for the HS.146 will be provided by four Avco Lycoming ALF 502H high-bypass turbofans.

A74-21728 * The augmentor wing - Powered-lift STOL a proven concept. D. C. Whittley (Havilland Aircraft of Canada, Ltd., Downsview, Ontario, Canada). *Interavia*, vol. 29, Feb. 1974, p. 143-145. Research supported by the Department of Industry, Trade and Commerce and NASA.

A jet-STOL powered-lift aircraft has the ability to perform a relatively steep (7.5 deg) final approach at high power setting and a low speed. The DHC-5 Buffalo/Spey Augmentor-Wing research aircraft is the first machine of its kind to accomplish this

performance. The aircraft uses an approach in which the cold bypass thrust is vectored by the augmentor flap. Aspects of aircraft reliability are discussed together with taxi trials, stalling characteristics, lateral directional control, single-engine operations, roll acceleration, and flight in turbulent conditions.

A74-21929 Acoustic holography in solids. H. K. Wickramasinghe. In: Ultrasonics international 1973; Proceedings of the Ninth Conference, London, England, March 27-29, 1973. Guildford, Surrey, England, IPC Science and Technology Press, Ltd., 1973, p. 283, 284.

The hologram is derived from the free surface of the sample by the phase modulation of a laser beam, the phase modulation being converted into amplitude modulation by making the hologram surface one mirror of a very close-spaced Fabry-Pérot resonator. The use of this optical resonator system brings two main benefits. Firstly, the region where the laser beam carries phase information is confined to the space between the mirrors, which can with advantage be made very narrow (typically less than 1/2 mm). The requirements on the mechanical stability of the rest of the apparatus are, therefore, very modest. Secondly, the use of the Fabry-Pérot gives rise to a very substantial increase in sensitivity, limited only by the maximum reflectivity and losses in the mirrors. Frequencies of 150 MHz have been used, resulting in a resolution of 90 micrometers.

A74-21781 # Studies of an elastic wing (Badania sprezystego skrzydla). J. Wolf. *Instytut Lotnictwa, Prace,* no. 56, 1973, p. 3-15. 10 refs. In Polish.

Description of design calculations, aerodynamic tests, and mechanical endurance measurements of an experimental sail-like wing consisting of a stretched flexible membrane made from durable synthetic cloth. The symmetry axis of the membrane is attached to a longitudinal beam, and the wing-tips are anchored to the ends of a transverse spar. The proposed flexible wing exhibits higher aerodynamic efficiency and a better polar curve than the Rogallo wing while maintaining the structural simplicity of the latter. Application is suitable for flight velocities from 20 to 150 km/hr.

T.M.

A74-21784 # An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship (Proba okreslenia charakterystyki statycznej turbinowego silnika odrzutowego w postaci zalezności wyrażonej wzorem). F. Lenort and D. Gruszczynski. *Instytut Lotnictwa, Prace*, no. 56, 1973, p. 55-67, 18 refs. In Polish.

A74-21820 # Flight test of the ski equipped Mohawk. D. B. Small (Grumman Aerospace Corp., Bethpage, N.Y.). Canadian Aeronautics and Space Journal, vol. 20, Jan. 1974, p. 1-14. 10 refs.

The experimental Mohawk skis with the wheels protruding below the teflon coated planing surface were flight tested. The tests of the experimental skis demonstrated conclusively that a planform of this type, while acceptable for some aircraft, was unsatisfactory for use on the Mohawk. Design studies were made indicating that radical changes would be required in the final design of the prototype skis. The planform of the teflon bottomed prototype skis presented the following changes and improvements to the Mohawk ski: (1) an increase in the main ski area, which reduces the loading from 360 to 210 lb/sq ft, resulting in lower bearing pressures and shallower penetrations; (2) teflon bottoms which make an excellent sliding surface; and (3) symmetrical planforms with no tire cutouts, which provides for a continuous running or planing surface. Flight test of the prototype skis were successfully conducted in depths of all types of snow ranging from 2 in. to 3.5 ft. The prototype skis planed over all snow surfaces encountered, at less than 20% of the engine power required for the experimental skis and with no indication of snow plowing or wallowing. These tests satisfactorily demonstrated the prototype wheel-ski combination installation in the Mohawk

(Author)

A74-21821 # The single-engine turboprop in the northern frontier. R. L. Newman, J. J. Petraits, and J. D. Flanders (General Motors Corp., Detroit Diesel Allison Div., Indianapolis, Ind.). (Canadian Aeronautics and Space Institute, Annual General Meeting, Edmonton, Canada, May 14, 1973.) Canadian Aeronautics and Space Journal, vol. 20, Jan. 1974, p. 15-20. 11 refs.

The operational environment of the Canadian Frontier makes a strong argument for a light, single-engine turboprop airplane. The requirements call for a light, reliable engine to maximize the payload capacity of these 'Bush Airplanes.' The geographical location and remote landing sites lead to emphasized takeoff and climb performance over cruise speed and altitude capabilities. The acceptance of the light turboshaft engine in the helicopter market has set a precedent where similar engine requirements of maximizing available takeoff power and payload capability have resulted in the rapid switch to turbine power. Operating cost characteristics of single-engine turboprop aircraft are compared to current designs to permit an evaluation of operations where turbine power can increase profit potential. (Author)

A74-21874 # The environment and the gas turbine. A. H. Lefebvre and R. S. Fietcher (Cranfield Institute of Technology, Cranfield, Beds., England). In: Symposium on the Environment and Transport Technology, Loughborough University of Technology, Loughborough, Leics., England, September 10-13, 1973, Proceedings. Volume 2. Loughborough, Leics., England, Loughborough University of Technology, 1973, p. D.17.1-D.17.25. 18 refs.

The major pollutants produced by gas turbines and the manner and extent to which their exhaust concentration varies with combustor design and engine operating conditions are discussed. Various techniques, for reducing emission levels are described, including rich and lean primary zones, water injection, compressor air bleed, variable geometry, and staged combustion. It is suggested that the 1979 U.S. EPA emission standards for aircraft can be met by relatively straightforward modifications to the combustor combined with the use of compressor air bleed at idling. Reference is made to the contribution made toward easing the emissions problem by a reduction in engine specific fuel consumption.

A74-22102 Airplane nacelle composite structure technology, L. D. Christensen and R. N. Holmes (Doulgas Aircraft Corp., Long Beach, Calif.). In: Polymeric materials for unusual service conditions; Proceedings of the Conference, Moffett Field, Calif., November 29-December 1, 1972. New York, Wiley-Interscience, 1973, p. 3-19, 10 refs.

A method of composite integral construction is described which shows potential for satisfying most of the requirements posed on commercial jet aircraft nacelles. Among these requirements are: sustained high-temperature operation and intermittent environmental operating extremes under flight loads; severe sonic fatigue conditions; fire burnthrough resistance; and sound attenuation capability. The development and application of a glass fiber/polyimide resin configuration is described, and test-stand data obtained with a full-scale glass/polyimide inlet acoustical liner intended for an advanced technology airplane are examined.

V.P.

A74.22206 Vortexes in aircraft wakes, N. A. Chigier, Scientific American, vol. 230, Mar. 1974, p. 76-83.

The advent of the jumbo jets has turned the well known aerodynamic phenomenon of trailing-vortex air turbulence into a

potentially serious hazard to smaller following aircraft. The main objectives of current research problems have been {1} to ascertain the nature, strength, and persistence of the vortexes for various kinds of aircraft; {2} to develop a practical means of reducing the hazard on existing aircraft by artificially inducing the vortexes to break up, and (3) to set up monitoring and control systems at airports in order to prevent aircraft from entering the vortex-wake turbulence of larger aircraft.

A74-22225 # Dynamic stability of sweptback aircraft wings under the action of variable aerodynamic forces (Stabilitatea dinamica a aripilor de avion in sageata sub actiunea fortelor aerodinamice variabile). N. D. Popescu (Petrosani, Institutul de Mine, Petrosani, Rumania). Transporturi Auto, Navale si Aeriene, vol. 3 (20), Dec. 1973, p. 653-665. 9 refs. In Rumanian.

Analysis of the phenomenon of dynamic instability (or aeroelastic divergence) of sweptback aircraft wings under conditions where the aerodynamic pressure varies sinusoidally in time or varies in the form of periodically recurring triangular pulses. For the purposes of this study a wing of this type is approximated by a thin-walled cantilevered bar of closed profile the cross section of which varies along the wing span. A system of four Hill-type differential equations is obtained for determining the stability of the vibrational motion of a sweptback wing considered within the framework of such an approximation. This system of equations is then solved for two types of variation of aerodynamic pressure - one where the aerodynamic pressure has a continuous harmonic variation, and the other where the aerodynamic pressure varies in the form of various types of periodically recurring triangular pulses, including pulses in the shape of arbitrary triangles, pulses in the A.B.K. shape of isosceles triangles, and sawtooth pulses.

A74-22244 On the effect of quieter aircraft engines on noise and number index /NNI/ values. D. Thomas and J. Zarzycki (South Bank, Polytechnic, London, England). *Journal of Sound and Vibration*, vol. 32, Jan. 22, 1974, p. 283-285,

An expression for the resultant change in NNI is recorded, and some of the numerical results obtained from it are given. Examination of the Wilson Committee's expression (1963) for NNI shows the NNI values to be linearly dependent on both the logarithmic average perceived noise level (expressed in PNdB) and the logarithm of the number of aircraft movements taking place in a 12-hr period. Consequently any change in observed NNI value brought about by a given change in flying conditions is independent of the original NNI value. It is then meaningful to calculate changes in NNI without reference to the original value.

A74-2270 # Calculation and observance of landing parameters for the aircraft IL-62 and their effect on the safety factor (Berechnung und Einhaltung der Landeparameter für den Flugzeugtyp IL-62 und ihr Einfluss auf den Sicherheitsfaktor). K. Beck and W. Hertwig (Gesellschaft für Internationalen Flugverkehr mbH, Berlin, East Germany). Technisch-ökonomische Informationen der zivilen Luftfahrt, vol. 9, no. 6, 1973, p. 311-321. In German.

The safe performance of a landing operation is only possible if the admissible landing weight of the aircraft is not exceeded. The value of the admissible landing weight depends on the length of the runway and the existing meteorological conditions. Other important parameters for a safe landing are the speed which the aircraft has at the beginning of the glide path and the altitude of the aircraft at this moment. Approaches for the determination of these landing parameters are discussed, giving attention also to the value of the safety factor applying under various conditions of operation and environment.

G.R.

A74-22272 # The Dolphin airship with undulating propulsion system - A new form of the evaluation factor (Delphinluftschiff

mit Wellantrieb - Neue Form der Wertigkeitszahl). W. Schmidt (KdT-Arbeitsausschuss zum Studium der Luftschiffahrt, Dresden, East Germany). Technisch-ökonomische Informationen der zivilen Luftfahrt, vol. 9, no. 6, 1973, p. 351-354. 7 refs. In German.

The airship evaluation factor due to Jaray and reported by Pfeiffer (1935) is considered. The evaluation factor is the ratio between propulsion efficiency and air resistance coefficient. In the case of the Dolphin airship, the evaluation factor in its present form cannot be used due to the impossibility of a separate determination of the two parameters involved in the ratio. A new evaluation factor is, therefore, derived and used for the evaluation of a number of airships.

G.R.

A74-22273 # Aerodynamic analysis of various flight conditions of conventional aircraft. IX - Aerodynamic foundations /General Survey/ (Flugmechanische Analyse verschiedener Flugzustände konventioneller Flugzeuge. IX - Aerodynamische Grundlagen /Allgemeines/). F. Seidler (Hochschule für Verkhehrswesen, Dresden, East Germany). Technisch-ökonomische Informationen der zivilen Luftfahrt, vol. 9, no. 6, 1973, p. 355-364. In German.

A74-22283 # Numerical solution of the problem of supersonic gas flow over the upper surface of a delta wing in the expansion region (Chislennoe reshenie zadachi obtekaniia verkhnei poverkhnosti treugol'nogo kryla v oblasti rasshireniia sverkhzvukovym potokom gaza). G. P. Voskresenskii. PMTF - Zhurnal Prikladnoi Mekhaniki i Tekhnicheskoi Fiziki, Nov.-Dec. 1973, p. 76-81. 7 refs. In Russian.

A74-22304 # Flow of hydrogen-oxygen mixtures around blunted bodies moving at high velocity (Obtekanie dvizhushchikhsia s bol'shoi skorost'iu zatuplennykh tet smes'iu vodoroda s kistorodom). S. Iu. Cherniavskii, N. N. Baulin, and A. S. Mkrtumov. Fizika Goreniia i Vzryva, vol. 9, Nov.-Dec. 1973, p. 786-791. 6 refs. In Russian

STAR ENTRIES

N74-15700 Washington Univ., Seattle.

A PREDICTION MODEL FOR WAKE RELATED SOUND GENERATION BY SINGLE AIRFOILS AND SUBSONIC ROTORS Ph.D. Thesis

Larry Trumbull Clark 1973 159 p

Avail: Univ. Microfilms Order No. 73-27642

A model for the prediction of wake related sound generation by a single airfoil is presented. The basis of the model is an assumption that the net force fluctuation on an airfoil may be expressed in terms of the net momentum fluctuation in the near wake of the airfoil. This near wake model results in the forcing function for sound generation being the spectra of the two point velocity correlations in the turbulent region near the airfoil trailing edge. The single airfoil result was extended to a rotor geometry and comparisons studied for various aerodynamic parameters. The motion of the source was found to influence the spectrum of radiated sound very little. This was due to the relatively broad band spectrum of the source. Sample computations were made for large subsonic rotors and the noise levels due to the wake mechanism alone were found to be significant.

Dissert Abstr

N74-15701# Pisa Univ. (Italy).

A METHOD FOR MEASURING THE DYNAMIC STABILITY CYR IN A SUBSONIC WIND TUNNEL [UN METODO PER LA MISURA DELLA DERIVATA DINAMICA DI STABILITA CYR IN GALLERIA AERODINAMICA SUBSONICA]

G. Barsotti, C. Casarosa, and G. Rossi 1972 36 p refs In

(Rept-1427) Avail: NTIS HC \$4.00

A method is described for measuring the dynamic stability derivative by means of the free oscillations of a model in a wind tunnel. This method is based on the measurement of the existing phase between a signal proportional to the deviation of the model, and a signal proportional to the angle of rotation. The stability derivative of an aircraft model with delta wings is determined, and the results compared to those derived by other methods:

Transl. by F.O.S.

N74-15702# Weapons Research Establishment, Salisbury (Australia).

DESCRIPTION OF SIX DEGREE OF FREEDOM RIGID AIRCRAFT MATHEMATICAL MODELS

J. A. Rein, J. E. Barrett, and R. Wilson Mar. 1973 67 p refs (WRE-TN-901(WR/D)) Avail: NTIS HC \$5.50

The development of a mathematical model for investigating the flight dynamics of a high speed aircraft is discussed. The mathematical model requires a data store containing the physical parameters of the aircraft under study, the static aerodynamic force and moment coefficients as nonlinear functions of the Mach number, angle of incidence and yaw, and the aerodynamic derivatives with respect to roll, pitch, and yaw rates tabulated against Mach number and angle of incidence. Simulation of the aircraft motion is then performed by solving the six degree of freedom Euler equations of motion for a rigid body, referred to body axes through the center of mass.

N74-15703*# National Aeronautics and Space Administration.
Langley Research Center, Langley Station, Va.
FIXED-BASE SIMULATION STUDY OF DECOUPLED
CONTROLS DURING APPROACH AND LANDING OF A

STOL TRANSPORT AIRPLANE

G. Kimball Miller, Jr., Perry L. Deal, and Robert A. Champine Washington Feb. 1974 63 p refs (NASA-TN-D-7363; L-8825) Avail: NTIS HC \$3.50 CSCL 0.18

A fixed-base visual simulation study has been conducted to evaluate the use of decoupled controls as a means for reducing pilot workload during approach and landing of an externally blown jet-flap short take-off and landing (STOL) transport. All six rigid-body degrees of freedom were employed with the aerodynamic characteristics based on wind-tunnel data. The primary piloting task was to use a flight director to capture and maintain a two-segment glide slope, with a closed-circuit television display of a STOL airport used during simulations of the flare and landing. The decoupled longitudinal controls used constant prefilter and feedback gains to provide steady-state decoupling of flight-path angle, pitch angle, and forward velocity. The pilots were enthusiastic about the decoupled longitudinal controls but believed the decoupled concept offered no significant advantage over conventional controls in the lateral mode Author

N74-15704*# Calspan Corp., Buffalo, N.Y.

ANALYSIS OF THE FLOW ABOUT DELTA WINGS WITH LEADING EDGE SEPARATION AT SUPERSONIC SPEEDS Joseph P. Nenni and Chee Tung [1974] 43 p refs (Contract NAS1-11577)

(NASA-CR-132358) Avail: NTIS HC \$4.25 CSCL 01A

A research program was conducted to develop an improved theoretical flow model for the flow about sharp edge delta wings with leading-edge separation at supersonic speeds. The flow model incorporates a representation of the secondary separation region which occurs just inboard of the leading edge on such wings and is based on a slender-wing theory whereby the full three-dimensional problem is reduced to a quasi two-dimensional problem in the cross-flow plane. The secondary separation region was modeled by a surface distribution of singularities or a linearized type of cavity representation. The primary vortex and separation were modeled by a concentrated vortex and cut in the cross-flow potential which represents its feeding sheet (in the sense of Brown and Michael). The formulation is made determinate by requiring that the stream lines in the cavity region be conical rays, by imposing a cavity closure condition, by applying a Kutta condition at the wing leading edge, and by requiring that the primary vortex and its feeding sheet be force free. The flow model reduces to that of Brown and Michael in the limit of zero cavity width. Author

N74-15705# Naval Ship Research and Development Center, Bethesda, Md

A LINEARIZED THEORY FOR THE UNSTEADY MOTIONS OF A WING IN CURVED FLIGHT

Edwin C. James Aug. 1973 29 p refs (780230101)

(AD-769671; NSRDC-4098) Avail: NTIS CSCL 20/4

A linearized theory is developed to treat small-amplitude unsteady motions of a wing in curved flight at variable local forward speeds in an inviscid incompressible fluid. The wing geometry, motions, and flight path are specified and the problem is to obtain the time-dependent force, moment, power required to sustain the motion, pressure and velocity fields, and energy loss due to the shedding of vorticity. The theory is expected to provide useful estimates provided the wing does not cross its own wake. The effect of path curvature is a particular interest in this investigation. To contrast this effect, the results can be readily compared with those for a wing in straight-line flight.

Author (GRA)

N74-15706# Naval Postgraduate School, Monterey, Calif. A NONLINEAR RELAY MODEL FOR POST STALL OSCILLA-TIONS

Arthur L. Schoenstadt Sep. 1973 36 p ref (RR0000150)

(AD-769405; NPS-53ZH73091A) Avail: NTIS CSCL 01/1

A simplified non-linear relay model is developed to describe observed post-stall oscillations in aircraft. The predictions of

the model are evaluated against results obtained by numerical techniques, and shown to yield close agreement. Author (GRA)

N74-15707# Air Force Inst. of Tech., Wright-Patterson AFB. Ohio. School of Engineering.

AN EXPERIMENTAL INVESTIGATION OF A HIGH LIFT DEVICE ON THE OWL WING M.S. Thesis

George William Anderson Mar. 1973 91 p refs

(AD-769492; GAM/AE/73-6) Avail: NTIS CSCL 01/1

A study was made of the aerodynamic function of the comblike fixtures found on the leading edge of owl wings. Microphotographs of an owl's wing showed the comb to resemble a row of spanwise twisted airfoils oriented to form a cascade. Smoke flow visualization tests on an owl wing showed that the comb acts as a cascade which turns the flow close to the wing leading edge in a spanwise direction. Flow visualization experiments were run using flat plate and cambered airfoils with combs in a low speed three-dimensional wind tunnel. Results showed that the leading edge comb produced a stationary spanwise vortex that delays flow separation at high angles of attack. The high lift device was related to the vortex lift phenomena observed on delta wing aircraft. The comb's small relative size, simple structure, and lack of moving parts may make it attractive for aircraft use.

Author (GRA)

N74-15709# National Aeronautical Lab., Bangalore (India). CHANGES IN FLUTTER RESULTS BY STIFFENING SOME DEGREES OF FREEDOM

Kurze Mittelung Nov. 1973 11 p refs. Transl: into ENGLISH from Z. Flugwiss. (Brunswick), v. 6, 1973 p 213-215 (TR-195) Avail: NTIS HC \$3.00 CSCL 01C

A method for conducting a flutter analysis of elastically connected aircraft structures with low masses is presented. In the first step, the flutter results are changes so that the concerned parts appear to be rigidly connected to the main frame. In the second step, the degree of freedom is allowed so that the stiffness of the joint can be arbitrarily chosen. The method has the advantage that in the second step the masses associated with the degree of freedom can be introduced and ascertained through supplementary tests or through calculations.

Author

N74-15710*# Hydronautics, Inc., Laurel, Md. EVALUATION OF EFFECTIVENESS OF VARIOUS DEVICES FOR ATTENUATION OF TRAILING VORTICES BASED ON MODEL TESTS IN A LARGE TOWING BASIN Final Report

Karl L Kirkman, Clinton E. Brown, and Alex Goodman Washington NASA Dec. 1973 114 p refs

(Contract NAS1-11389)

(NASA-CR-2202) Avail: NTIS HC \$4.25 CSCL 01B

The effectiveness of various candidate aircraft-wing devices for attenuation of trailing vortices generated by large aircraft is evaluated on basis of results of experiments conducted with a 0.03-scale model of a Boeing 747 transport aircraft using a technique developed at the HYDRONAUTICS Ship Model Basin. Emphasis is on the effects produced by these devices in the far-field (up to 8 kilometers downstream of full-scale generating aircraft) where the unaftered vortex-wakes could still be hazardous to small following aircraft. The evaluation is based primarily on quantitative measurements of the respective vortex velocity distributions made by means of hot-film probe traverses in a transverse plane at selected stations downstream. The effects of these altered wakes on rolling moment induced on a small following aircraft are also studied using a modified lifting-surface theory with a synthesized Gates Learjet as a typical example. Lift and drag measurements concurrently obtained in the model tests are used to appraise the effects of each device investigated on the performance characteristics of the generating aircraft.

Author

N74-15711*# Boeing Vertol Co., Philadelphia, Pa.
V/8TOL TILT ROTOR AIRCRAFT STUDY: WIND TUNNEL
TESTS OF A FULL SCALE HINGELESS PROP/ROTOR
DESIGNED FOR THE BOEING MODEL 222 TILT ROTOR
AIRCRAFT

J. P. Magee and H. R. Alexander Oct. 1973 873 p refs (Contract NAS2-6505)

(NASA-CR-114664; D222-10059-1) Avail: NTIS HC \$45.75 CSCL 01C

The rotor system designed for the Boeing Model 222 tilt rotor aircraft is a soft-in-plane hingeless rotor design, 26 feet in diameter. This rotor has completed two test programs in the NASA Ames 40' X 80' wind tunnel. The first test was a windmilling rotor test on two dynamic wing test stands. The rotor was tested up to an advance ratio equivalence of 400 knots. The second test used the NASA powered propeller test rig and data were obtained in hover, transition and low speed cruise flight. Test data were obtained in the areas of wing-rotor dynamics, rotor loads, stability and control, feedback controls, and performance to meet the test objectives. These data are presented.

Author

N74-15712*# Boeing Commercial Airplane Co., Seattle, Wash, DESIGN OF A POWERED ELEVATOR CONTROL SYSTEM Final Report

W. L. B. Glende 22 Jan. 1974 135 p refs (Contract NAS2-7293)

(NASA-CR-114727) Avail: NTIS HC \$8.75 CSCL 01C

The design, fabrication and flight testing of a powered elevator system for the Augmentor Wing Jet STOL Research Aircraft (AWJSRA or Mod C-BA) are discussed. The system replaces a manual spring tab elevator control system that was unsatisfactory in the STOL flight regime. Pitch control in the AWJSRA is by means of a single elevator control surface. The elevator is used for both maneuver and trim control as the stabilizer is fixed. A fully powered, irreversible flight control system powered by dual hydraulic sources was designed. The existing control columns and single mechanical cable system of the AWJSRA have been retained as has been the basic elevator surface, except that the elevator spring tab is modified into a geared balance tab. The control surface is directly actuated by a dual tandem moving body actuator. Control signals are transmitted from the elevator aft quadrant to the actuator by a linkage system that includes a limited authority series servo actuator.

N74-15713*# Boeing Commercial Airplane Co., Seattle, Wash. A STUDY TO DETERMINE THE FEASIBILITY OF A LOW SONIC BOOM SUPERSONIC TRANSPORT Final Report, Nov. 1972 - Jul. 1973

Edward J. Kane Washington NASA Dec. 1973 129 p refs (Contract NAS1-11877) (NASA-CR-2332; D6-41177) Avail: NTIS HC \$4.50 CSCL 01C

A study was made to determine the feasibility of supersonic transport configurations designed to produce a goal sonic boom signature with low overpressure. The results indicate that, in principle, such a concept represents a potentially realistic design approach assuming technology of the 1985 time period. Two sonic boom goals were selected which included: (1) A high speed design that would produce shock waves no stronger than 48 Newtons per square meter (1.0 psf); and an intermediate Mach number (mid-Mach) design that would produce shock waves no stronger than 24 Newtons per square meter. The high speed airplane design was a Mach 2.7 blended arrow wing configuration which was capable of carrying 183 passengers a distance of 7000 km (3780 nmi) while meeting the signature goal. The mid-Mach airplane designed was a Mach 1.5 low arrow wing configuration with a horizontal tail which could carry 180 passengers a distance of 5960 km (3220 nmi). Author

N74-15714*# McDonnell-Douglas Corp., Long Beach, Calif. A STUDY TO DETERMINE THE APPLICABILITY OF NOISE ABATEMENT APPROACH PROCEDURES TO MCDONNELL DOUGLAS AIRCRAFT Final Report

John A. Painter and James H. Shannon Dec. 1973 59 p (Contract NAS2-7586)

(NASA-CR-114677; MDC-J6220) Avail: NTIS HC \$5.00 CSCL 01C

Analyses of McDonnell Douglas DC-8, DC-9, and DC-10 jet transports were conducted to investigate the applicability of two segment approach noise abatement procedures to these airplanes.

All models had the required glide slope capability at the certified landing flap settings. The DC-8 models would probably be limited to an upper segment glide slope of 5.5 degrees and would probably not be suitable for the two segment procedure in icing conditions. The DC-8 would not be compatible with this procedure at a reduced landing flap setting. The feasibility of installing a two segment approach system in the Douglas-built fleet of commercial jet transports from a hardware viewpoint is discussed. The candidate system consists of a two segment computer plus the necessary peripheral equipment interfaced with the existing autopilot and associated avionics. The required modifications and additions to existing equipment are described and the attendant costs estimated. Potential problems which may be encountered are also discussed.

N74-15715*# Systems Technology, Inc., Hawthorne, Calif. DESIGN OF A FLIGHT DIRECTOR/CONFIGURATION MANAGEMENT SYSTEM FOR PILOTED STOL AP-**PROACHES**

Roger H. Hoh, Richard H. Klein, and Walter A. Johnson Sep. 1973 177 p refs

(Contract NAS2-6441)

(NASA-CR-114688; STI-TR-1015-3) Avail: NTIS HC \$11.00 CSCL 01C

The design and characteristics of a flight director for V/STOL aircraft are discussed. A configuration management system for piloted STOL approaches is described. The individual components of the overall system designed to reduce pilot workload to an acceptable level during curved, decelerating, and descending STOL approaches are defined. The application of the system to augmentor wing aircraft is analyzed. System performance checks and piloted evaluations were conducted on a flight simulator and the results are summarized.

N74-15716*# Hydrospace-Challenger, Inc., San Diego, Calif. NOISE MEASUREMENTS OBTAINED DURING ENGINEER-ING EVALUATION OF TWO-SEGMENT APPROACHES IN A 727-200 AIRCRAFT

Carole S. Tanner and Ray E. Glass 21 Jan. 1974 54 p (Contract NAS2-7369)

(NASA-CR-114691; HCI-TR-S-229) Avail: NTIS HC \$4.75 CSCL 01C

A series of noise measurements were made during engineering evaluation tests of two-segment approaches in a 727-200 aircraft equipped with acoustically treated nacelles. A two-segment approach having a 6-degree upper glide slope angle intercepting the Instrument Landing System (ILS) 2.9-degree glide slope at an altitude of 690 feet gave a 5-EPNdB decrease in measured noise at distances greater than 3 nautical miles from the runway threshold when compared with a normal ILS approach. Several of the noise measurements were taken under adverse weather conditions which were outside the specified limits of FAR Part 36. This may introduce uncertainties into the data from several Author approaches.

N74-15717*# Lockheed-Georgia Co., Marietta. C-5A/ORBITER WIND TUNNEL TESTING AND ANALYSIS: PIGGYBACK FERRY Final Report

K. H. Tomlin, W. T. Blackerby, A. C. Hughes, E. G. Husband, and J. H. Paterson Dec. 1973 239 p refs

(Contract NAS9-13702)

(NASA-CR-133484; LG73ERO193) Avail: NTIS HC \$14.00 CSCL 01C

Wind tunnel testing and analytical studies of the feasibility of ferrying the NASA Shuttle Orbiter on the C-5A in a piggyback mode have been accomplished. Testing was conducted in the 8x12 foot low speed wind tunnel using an existing 0.0399 scale C-5A model in conjunction with a NASA 0.0405 scale Orbiter model. Six component force and moment data were measured over a range of pitch and yaw angles to determine lift and drag characteristics, lateral/directional stability characteristics and longitudinal and directional control powers. A description of the wind tunnel test program with a run schedule and the complete plotted data for all the test runs are presented. Initial emphasis was given to determining the effects of the Orbiter above the

C-5A and the optimum location for minimum interference on C-5A characteristics. A comprehensive series of cruise configurations were tested including a range of Orbiter longitudinal and vertical locations, incidences, and afterbody fairings. Subsequently, a series of configurations were devised during the test program to determine means of recovering directional stability degradation due to Orbiter interference.

N74-15718*# Kanner (Leo) Associates, Redwood City, Calif. REDUCTION OF AIRCRAFT NOISE IN THE VICINITY OF **AIRPORTS**

B. N. Melnikov Washington NASA Feb. 1974 39 p refs Transl. into ENGLISH of "Snizhenie Shuma Samoletov v Okrestnostiakh Aeroportov'', paper presented at USSR/US Aeron. Technol. Symp., Moscow, 23-27 Jul. 1973 30 p (Contract NASw-2481)

(NASA-TT-F-15237) Avail: NTIS HC \$4.00 CSCL 01C

The main sources of noise from modern transport aircraft are examined along with currently employed means of minimizing the influence of aircraft noise on communities neighboring air terminal areas. The complexity of the task is elucidated by stressing the importance of unified development and implementation of measures designed to reduce the noise both at the source and along its path of propagation. These measures are identified as specially designed low-noise engines, traffic control and flightmaneuver procedures stressing noise abatement, and architectural as well as urban planning guidelines in the growth of nearby communities. Operational examples of noise abatement procedures employed by current Soviet transport aircraft are described, and their effectiveness is evaluated.

N74-15719*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

ACOUSTIC CHARACTERISTICS OF A LARGE-SCALE WIND TUNNEL MODEL OF AN UPPER-SURFACE BLOWN FLAP TRANSPORT HAVING TWO ENGINES

Michael D. Falarski, Kiyoshi Aoyagi, and David G. Koenig Sep. 1973 82 p. refs. Prepared in cooperation with Army Air Mobility R and D Lab., Moffett Field, Calif.

(NASA-TM-X-62319) Avail: NTIS HC \$6.25 CSCL 01C

The upper-surface blown (USB) flap as a powered-lift concept has evolved because of the potential acoustic shielding provided when turbofan engines are installed on a wing upper surface. The results from a wind tunnel investigation of a large-scale USB model powered by two JT15D-1 turbofan engines are-presented. The effects of coanda flap extent and deflection, forward speed, and exhaust nozzle configuration were investigated. To determine the wing shielding the acoustics of a single engine nacelle removed from the model were also measured. Effective shielding occurred in the aft underwing quadrant. In the forward quadrant the shielding of the high frequency noise was counteracted by an increase in the lower frequency wing-exhaust interaction noise. The fuselage provided shielding of the opposite engine noise such that the difference between single and double engine operation was 1.5 PNdB under the wing. The effects of coanda flap deflection and extent, angle of attack, and forward speed were small. Forward speed reduced the perceived noise level (PNL) by reducing the wing-exhaust interaction noise.

Author

N74-15720*# General Electric Co., Pittsfield, Mass. PRELIMINARY TESTS OF VULNERABILITY OF TYPICAL AIRCRAFT ELECTRONICS TO LIGHTNING-INDUCED **VOLTAGES** Final Report

J. A. Plumer and L. C. Walko Washington NASA Feb. 1974 50 p refs

(Contract NAS3-14836)

(NASA-CR-2350; SRD-72-067) Avail: NTIS HC \$3.00 CSCL

Tests made on two pieces of typical aircraft electronics equipment to ascertain their vulnerability to simulated lightninginduced transient voltages representative of those which might occur in flight when the aircraft is struck by lightning were conducted. The test results demonstrated that such equipment can be interfered with or damaged by transient voltages as low as 21 volts peak. Greater voltages can cause failure of semiconductor components within the equipment. The results emphasize a need for establishment of coordinated system susceptibility and component vulnerability criteria to achieve lightning protection of aerospace electrical and electronic systems.

N74-15722# Deutsche Forschungs- und Versuchsanstalt füer Luft- und Raumfahrt, Oberpfaffenhofen (West Germany) TABLES FOR FLIGHT TESTS TABELLENBUCH FUER DEN FLUGVERSUCH)

1973 113 p In GERMAN Avail: NTIS HC \$7.75

The tables include data on standard atmosphere, calibration velocity determination from pressure gradients, calibration Mach number, and sound velocity

N74-15723# Battelle Columbus Labs., Ohio. DESIGN GUIDE FOR THE USE OF STRUCTURAL SHAPES IN AIRCRAFT APPLICATIONS. PART 1: SELECTION CRITERIA FOR STRUCTURAL SHAPES AND TUBING. PART 2: MANUFACTURING METHODS FOR STRUC-TURAL SHAPES AND TUBING Final Technical Report, 1 Aug. 1971 - 30 Jul. 1973

Sep. 1973 226 p refs

(Contract F33615-71-C-1929)

(AD-769042; AFML-TR-73-211-Pt-1-Pt-2) Avail: NTIS CSCL 01/3

A two-part Design Guide was compiled to provide technical information and data in the production of structural shapes and tubing for aircraft and aerospace requirements. Part I provides selection criteria for shapes and tubing based on availabilities, design tolerances, and mechanical and physical properties. Part II discusses manufacturing methods for fabricating structural shapes and tubing, namely, extrusion, drawing, and form rolling. Also Part II reviews competitive processes for manufacturing structural type components. This Design Guide is intended to assist design engineers in assessing the availability and properties of materials being considered in new or modified aircraft and aerospace systems, and to assist potential manufacturers and suppliers in assessing equipment, tooling, and processing requirements for fabricating structural shapes and tubing. Materials for aerospace requirements covered in the document include high-strength aluminum alloys, titanium alloys, steels, superalloys, refractory metals, and beryllium. Author (GRA)

N74-15724# Systems Associates, Inc., Long Beach, Calif. US ARMY HELICOPTER ROD END BEARING RELIABILITY AND MAINTAINABILITY INVESTIGATION Final Report Sheldon Dockswell and James L. Huffman, Jun. 1973, 124 p. (Contract DAAJ02-71-D-0003; DA Proj. 1F1-62205-A-119) (AD-768843; SAI-R72-012; USAAMRDL-TR-73-35) Avail: NTIS CSCL 01/3

The investigation was carried out to identify, isolate, and verify the causes of problems with rod end bearings (REB) used on U.S. Army helicopters and to trace the resulting effects on helicopter availability. Design requirements, quality assurance provisions, maintenance procedures and practices, test requirements, and procurement practices were analyzed to assess their impact upon the current problems. Excessive play between ball and race was found to be the REB's chief failure mode. Design does not adequately contend with a vibratory environment which tends to cause widening of the race. Quality assurance was neither imposed upon the bearing vendors nor demonstrated by airframe manufacturers. A recommendation was made for a specification to be developed to govern existing or new designs, which include a stainless steel ball with a ceramic coating and a graphite race, a slotted spherical bearing, and an elastomeric spherical bearing. The recommended specification for helicopter REB's includes bond and material integrity, loading, vibration, dust, misalignment angle, qualification and conformity requirements. Specific recommendations for improvements to the policies, practices, and procedures are made in the report; hardware improvements are also discussed. Author (GRA) N74-15725# Boeing Vertol Co., Philadelphia, Pa. HLH GROUND SUPPORT EQUIPMENT (GSE) PRELIMINARY INVESTIGATION Final Report, Mar. - May 1973 John M. Corso, Thomas S. Hammer, and Frank J. Kozloski, Jun.

1973 124 n

(Contract DAA-102-72-C-0041: DA Proj. 1F1-62203-A-434) (AD-768842; D301-10188-1; USAAMRDL-TR-73-52) Avail: NTIS CSCL 01/3

The preliminary study was conducted to determine the GSE required for the heavy-lift helicopter (HLH) early enough in the program to allow ample time for development/procurement of long lead time items. The HLH aircraft systems were analyzed during the preliminary design stage to establish maintenance concepts, identify the necessary organizational and direct support level tasks, and select equipment suitable for performing the tasks identified. The selected equipment was classified as existing as-is, existing requiring modification, or not available and requiring new design and development effort. The elapsed maintenance time and the number of personnel required to perform organizational and direct support level tasks in the Army aviation environment were determined. In some instances, several alternate approaches for GSE were identified which will require trade-offs to complete the equipment selection process. (Modified author abstract)

N74-15726# Air Force Inst. of Tech., Wright-Patterson AFB. Ohio. School of Engineering.

ANALYSIS OF CONTROL SURFACE AUGMENTATION IN HIGH-PERFORMANCE AIRCRAFT BY THRUST VECTORING M.S. Thesis

Deas H. Warley, III Mar. 1973 111 p refs (AD-769495; GAM/AE/73-14) Avail: NTIS CSCL 01/2

The feasibility of engine thrust vectoring for lateral control of aircraft in the high angle:of-attack regime was investigated for an airplane with F-11 characteristics. The technique was found to be effective in increasing the angle-of-attack at which departure occurs. The method used an effective dynamic directional stability parameter to account for the thrust effect alteration of the static lateral stability parameters Cn beta and CI beta. Although the effective CI beta sub dyn could not be used to predict departure in the model studied, it was useful in evaluating the effectiveness of the thrust vectoring concepts.

Author (GRA)

N74-15727# Air Force Materials Lab Wright-Patterson AFB.

CONFERENCE ON TRANSPARENT AIRCRAFT ENCLO-SURES

Robert E. Wittman, comp. Jun. 1973 844 p. refs. Conf. held. at Las Vegas, Nev., 5-8 Feb. 1973 (AF Proj. 7381)

(AD-769344; AFML-TR-73-126) Avail: NTIS CSCL 01/3

The purpose of the report is to make available the technical papers presented at the recent Tenth Conference on Transparent Aircraft Enclosures. This conference was held for the exchange of knowledge on new developments and design concepts concerned with vision areas of crew enclosures. Also to make known the state-of-the-art with respect to transparent plastics. interlayer materials, and glass, of the type suitable for these applications. The papers contained have been reproduced directly from the original manuscripts. Author (GRA)

N74-15728# Georgia Inst. of Tech., Atlanta. School of Aerospace

STUDIES IN LOW SPEED FLIGHT Final Report, 1 Jun. 1971 - 31 Aug. 1973

Robin B. Gray, Howard M. McMahon, George T. Bird, and John G. Palfery Sep. 1973 14 p refs (Grant DA-ARO-(D)-31-124-71-G177)

(AD-768858; AROD-10233-1-E) Avail: NTIS CSCL 01/3

A model helicopter hovering flight test facility is briefly described and the results of the study to date are summarized. The objective is to design, construct, and validate a facility which would closely simulate free still-air conditions in a relatively small confined space. Tests in a one-quarter scale prototype using model airplane propellers successfully demonstrated the basic

concept. Results obtained in the larger facility are encouraging and the tests will continue.

Author (GRA)

N74-15729# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

Ohio. School of Engineering.
TWO DIMENSIONAL AIR CUSHION LANDING SYSTEM
PERIPHERAL JET CONFIGURATION STUDY M.S. Thesis
John Robert Rogers Mar. 1973 102 p refs
(AD-769494; GAM/AE/73-13) Avail: NTIS CSCL 01/3

A simplified two-dimensional peripheral jet theory for the equilibrium performance of an air cushion vehicle is investigated. The proposed theory intends to yield a rapid prediction of the actual flow rate and actual power requirements for an air cushion landing system in the hover condition. Nine specific nozzle configurations were tested to determine which resulted in the best power-height performance and whether the theory is able to predict the experimental performance. Three single peripheral jet configurations were tested at a trunk pressure of 80 psfg. Six distributed jet configurations were tested at a trunk pressure of 40 psfg. Effects of inward flow injection angles of 30 degrees and 60 degrees were investigated. (Modified author abstract)

N74-15730# Air Force Inst. of Tech., Wright-Patterson AFB. Ohio. School of Systems and Logistics.

AN INVESTIGATION OF COST FACTORS RELATING TO CLASS 4 AIRCRAFT MODIFICATIONS M.S. Thesis

Elvis M. Baker, William H. Burgess, and Albert F. Malkiewicz Aug. 1973 139 p. refs

(AD-769195; SLSR-18-73B) Avail: NTIS CSCL 15/5

The emphasis on economic use of resources, and the necessity to justify and account for each dollar spent, has required more research into ways and means of collecting costs of public programs. Aircraft modifications have been the subject of increasing concern, and the Air Force has been criticized for not being able to identify all costs of an aircraft modification. The research is an effort to determine what significant costs are involved in Class 4 aircraft modifications, and which of these have been included in modification approval procedures. Present modification processing procedures habe been presented to enable an understanding of how costs have been collected.

GRA

N74-15733# Air Force Inst. of Tech., Wright-Patterson AFB. Ohio. School of Systems and Logistics.

THE IMPACT OF CONVERSION TO THE METRIC MEASURE-MENT SYSTEM ON AIRCRAFT MAINTENANCE AT BASE LEVEL M.S. Thesis

Robert G. Dewey and Wayne A. Mann Aug. 1973 90 p refs (AD-769186; SLSR-5-73B) Avail: NTIS CSCL 01/3

The conclusions drawn in the thesis indicate that the impact of metric conversion on aircraft maintenance hardware will allow continued use of current shop machinery and servicing equipment with minor modification required in but few cases. The intermix of tools and stock of both dimensions can be accomplished with little difficulty by the user and will require additional storage space throughout the conversion period and for many years thereafter. Technical information will be affected but can assimilate metric in an orderly fashion.

GRA

N74-15735*# Kanner (Leo) Associates, Redwood City, Calif. PRACTICAL EXPERIENCE WITH A DIGITAL ELECTROHYDRAULIC ACTUATOR

J. Tersteegen Washington NASA Feb. 1974 39 p Transl. into ENGLISH of "Praktische Erfahrungen mit einem digitalen elektro-hydraulischen Stellantrieb", West Germany report DFVLR-IB-153-73/26, 1973 40 p

(Contract NASw-2481)

(NASA-TT-F-15292: DFVLR-IB-153-73/26) Avail: NTIS HC \$4.00 CSCL 01C

The basic feasibility of a digital electrohydraulic actuator has been demonstrated with the construction of a prototype. Implementation of this project required the development of electrohydraulic 3/2-way valves of high reliability and extremely short operating times. Setisfactory dynamic behavior on the part of the digital actuator is primarily determined by the accuracy of binary throughflow weighting. Detrimental movement (excess movement or movement in the wrong direction) due to inaccurate through-flow weighting or under loads should be avoidable if the output piston is locked until opposed low-level piston movements have been completed. The high-frequency detrimental movement of the digital actuator is filtered out when it is used as an anticipatory control instrument for a power amplifier to which it is connected.

N74-15736*# Kanner (Leo) Associates, Redwood City, Calif. THE DYNAMIC BEHAVIOR OF A DIGITAL ELECTROHYDRAULIC ACTUATOR

C. Brinckmann Washington NASA Feb. 1974 52 p refs Transl. into ENGLISH of "Zum dynamischen Verhalten eines digitalen elektro-hydraulischen Stellantriebs", West German report DLR-FR-73-106, 1973 53 p (Contract NASw-2481)

{NASA-TT-F-15295; DLR-FB-73-106} Avail: NTIS HC \$4.75 CSCL 01C

An analysis of the dynamic behavior of the digital electrohydraulic actuator (DEHA) is presented, which indicates that an appropriate locking mechanism may allow it to be used under dynamic and static loads. The increase in load capacity is accompanied by an increase in its irregularity of motion, which means increased dynamic loads on the elements attached to it. Cycle time is affected to a limited degree by loads, but inertial load capacity is seriously limited by the magnitude of permissible overshoot; this restriction rules out the use of the DEHA for, operating aircraft control surfaces directly. Its use as an anticipatory control unit in a sequential control system is suggested. A locking mechanism helps reduce the danger presented by the inaccurate calibration of throttle orifices, which may become worse over prolonged periods of operation. Author

N74-15748*# Linguistic Systems, Inc., Cambridge, Mass. METHOD OF CALCULATION OF ANNUAL OVERALL EFFICIENCY OF MODERN WIND-POWER PLANTS F. D. Pigeaud Washington NASA Feb. 1974 13 p refs

F. D. Pigeaud Washington NASA Feb. 1974 13 p refs Trenst. into ENGLISH from Ingenieur (The Hague), v. 63, no. 47, 23 Nov. 1971 p W1:37-W140 (Contract NASw-2482)

(NASA-TT-F-15310) Avail: NTIS HC \$3.00 CSCL 10B

A method of calculating the annual overall efficiency of modern wind power plants equipped with asynchronous generators is reported that takes into account the annual velocity duration curve at Den Helder, Holland, A comparison is made between variable pitch windmotor and fixed blade windmotor equipped with movable flaps. A careful calculation is recommended in view of rather small differences in efficiency for both systems.

Autho

N74-15829# Aerospace Research Labs., Wright-Patterson AFB, Obio

HOT CORROSION OF METALS, ALLOYS AND CERAMICS Final Report, Jun. 1971 - Jun. 1973

George F. Uhlig Sep. 1973 11 p

(AF Proj. 7021)

(AD-769340; ARL-73-0147) Avail: NTIS CSCL 11/6

A knowledge of the mechanism of accelerated oxidation due to the presence of sodium sulfate, called Hot Corrosion, on metals is fundamental to the design and improvement of jet aircraft gas turbines. The reaction/vaporization behavior of sodium sulfate on hot pressed oxides and on platinum was studied using continuous weight change versus time measurements. In addition, the hot corrosion behavior of TD Nickel-Chromium was also studied using continuous weight change versus time measurements. The major accomplishments of the research effort are summarized and the publications generated under this program are listed.

N74-15830# Florida Univ., Gainesville. Dept. of Chemistry.
TRACE SPECTROMETRIC FLAME ANALYSIS AND GAS CHROMATOGRAPHIC DETECTORS RELATED TO JET ENGINE OIL ANALYSIS AND GAS DETECTION Final Report. 1 Nov. 1969 - 31 Aug. 1973 James D. Winefordner 1973 15 p refs

(Grant AF-AFOSR-1880-70; AF Proj. 9536)

(AD-769298: AFOSR-73-1968TR) Avail: NTIS CSCL 07/3 The report briefly summarizes research on trace spectrometric flame analysis and gas chromatographic detectors related to jet engine oil analysis and gas detection at the University of Florida consists of fundamental, instrumental and applied studies of atomic and molecular emission, atomic absorption, and atomic and molecular fluorescence of gases and of development of gas chromatographic detectors. By means of such studies, new and improved selective, sensitive methods of trace analysis of elements and molecules in the gas state or convertible to the gas state are being developed. Special emphasis has been given to rapid simultaneous and rapid sequential multielement analysis of several elements or species. A list of publications is included. (Modified author abstract)

N74-15842# Forschungsinstitut fuer Hochfrequenzphysik. Werthhoven (West Germany).

ENGINEERING ASPECTS WITH SATELLITE COMMUNICA-TION TERMINALS IN AIRCRAFT

Kh. Rosenbach Dec. 1972 22 p refs Presented at the 13th Symp. on Tactical Satellite Commun., Oslo. 30 Aug. 1972 (Rept-7-72) Avail: NTIS HC \$3.25

Design aspects of satellite communication terminals in aircraft and associated engineering considerations are discussed with respect to relatively stringent target specifications. The units developed and described as examples serve the main purpose of R and D measurements. On the other hand, they may well be considered basic prototypes of future airborne terminals.

N74-15876# Lincoln Lab., Mass. Inst. of Tech., Lexington THE EFFECTS OF INTERFERENCE ON MONOPULSE PERFORMANCE

R. J. McAulya 1 Aug. 1973 35 p refs (Contract DOT-FA72WAI-261)

(AD-769336: TN-1973-30: ESD-TR-73-176) Avail: NTIS CSCL

The first and second moments of the monopulse azimuth estimates are used to characterize the estimator performance in a background of mainbeam or side-lobe multipath or ATCRBS interference. An exact expression for the bias error is obtained that not only accounts for the bias due to targets separated in azimuth but also demonstrates the effect of fading or signal cancellation. For a target signal at a 20 db signal-to-noise ratio, it is shown that the fading effect produces negligible bias unless the signal-to-interference ratio is between plus or minus 2.5 db. A first order expression for the variance is obtained that demonstrates that an increase in the random error will occur due to the target separation in azimuth and due to signal fades. The exact nature of the bias and variance depend strongly on the relative phase between the target and interference signals with the poorest performance being obtained at the in- and out-of-phase conditions. It is knowledge of this behaviour that is essential in evaluating the idea of azimuth estimation data editina Author (GRA)

N74-15906 British Library Lending Div., Boston Spa (England).

MICROELECTRONIC PHASE SHIFTERS IN X AND Q BANDS

C. Joussemet 5 Jul. 1973 24 p. Transl, into ENGLISH from Rev. Tech. Compagn. France. Thomson-Houston (Paris), v. 4, no. 2, Jun. 1972 p 407-431

(BLL-PO-2988-(9022.81)) Avail: British Library Lending Div., Boston Spa. Engl.: 3 BLL photocopy coupons

The circuits discussed are three-bit reflection digital shifters operating the X and Q bands and employing PIN diodes. After giving a theoretical exposition about perturbance transmission phase shifters and reflection type 0 to 120 deg phase shifters Data show how such phase shifters can be constructed in the hybrid integrated microcircuit technique and then gives the results obtained with such devices. Results also show that the phase shifters are compatible with electronic sweep aerials and may make it possible for such aerials to be used in mutiple function airhorne radare

N74-15939* National Aeronautics and Space Administration. Ames Research Center, Moffett Field Calif AMES RESEARCH FACILITIES SUMMARY 1974

1974 104 p

(NASA-TM-X-69411) Avail: Technical Information Division Ames Research Center, Moffett Field, California 94035 CSCL

This book is a summary of selected facilities at AMES Research Center focusing on: (1) subsonic, transonic, and supersonic wind tunnels: (2) high enthalpy and hypersonic wind tunnels, shock tubes, and ballistic ranges; (3) flight simulators; (4) research aircraft; and (5) computers. Author

N74-15962# Joint Publications Research Service, Arlington.

TURBULENT FLOW IN FLEXIBLE PIPES AND RAMJET **ENGINES**

14 Dec. 1973 29 p refs Transl, into ENGLISH from Gidromekhan. (Kiev), no. 24, 1973 19 p. (JPRS-60785) Avail: NTIS HC \$3.50

Experimental investigations are reported of turbulent flow in flexible pipes, hydro-gas ramjet engine models, and the ballasting method for increasing the thrust of a hydro-gas ramiet engine.

N74-16102*# National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.

FLIGHT EXPERIENCE WITH A PIVOTING TRAVERSING **BOUNDARY-LAYER PROBE**

Lawrence C. Montoya, David A. Brauns, and Ralph E. Cissell Jan. 1974 16 p refs

(NASA-TM-X-56022) Avail: NTIS HC \$3.00 CSCL 01D

A pivoting traversing boundary layer probe was evaluated in flight on an F-104 airplane. The evaluation was performed at free stream Mach numbers from 0.8 to 2.0. The unit is described. and operating problems and their solutions are discussed. Conventional boundary layer profiles containing variations in flow angle within the viscous layer are shown for free stream Mach numbers of 0.8, 1.6, and 2.0. Although the unit was not optimized for size and weight, it successfully measured simultaneously flow angularity, probe height, and pitot pressure through the boundary layer. Author

N74-16164# Air Force Packaging Evaluation Agency, Wright-Patterson AFB, Ohio.

EVALUATION AND REDESIGN OF FAA ALTIMETER PACK

Randle E. Dukes Oct. 1973 21 p

(AD-769540: DSPT-73-56) Avail: NTIS CSCL 13/4

The Federal Aviation Administration (FAA) has experienced an unacceptable damage rate (33%) in shipment of Station Altimeters. This item represents a cost of \$344.00 per unit. Due to a pending contract to purchase 300 new units, plus normal shipments of 200 per year, FAA requested an immediate interim solution to the problem, to be followed by a final package design optimizing shock protection while reducing weight, cube, and cost. Author (GRA)

N74-16249*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

TRANSPARENT FIRE RESISTANT POLYMERIC STRUC-TURES Patent Application

George M. Fohlen, John A. Parker, and Paul M. Sawko, inventors (to NASA) Filed 29 Jan. 1974 28 p

(NASA-Case-ARC-10813-1; US-Patent-Appl-SN-437556) Avail: NTIS HC \$3.50 CSCL 11D

Transparent impact, heat- and fire-resistant polymeric materials for making windows, windshields and plane canopies were developed. The polymeric materials comprise an epoxy resin cured with an alkoxy boroxine catalyst and a polycarbonate resin. preferably a polyphenolphthalein carbonate resin. Laminates including the advantages of both resins comprise a transparent layer of epoxy resin and a transparent layer of a polycarbonate resin joined together with a transparent adhesive interlayer.

Author

N74-16250*# Aluminum Co. of America, New Kensington, Pa. Research Labs

EFFECT OF POLYMER COATINGS ON FATIGUE STRENGTH OF ALUMINUM ALLOY 2024 BOX BEAMS Final Report, Apr. 1971 - May 1972

G. E. Nordmark and R. A. Kelsey, May 1972, 21 p. refs (Contract NAS2-6415)

(NASA-CR-114699) Avail: NTIS HC \$3.25 CSCL 11C

Previous investigators have shown that polymer coatings raise the fatigue strength of metals tested in air to about the same level as that of uncoated specimens tested in vacuum. The results are given of tests to determine if a polymer coating would improve the fatious strength of built-up aluminum alloy members simulating aircraft construction. Aluminum alloy 2024-T4 rivated box beams were subjected to constant amplitude fatigue tests in air as well as in salt water fog. The coating did not improve the fatigue strength of beams tested in eitner environment. This is believed to result from the fact that most failures originated at rivet holes, which were isolated from both the ceating and the environment Author

N74-16259# Army Materials and Mechanics Research Center. Watertown, Mass.

EFFECT OF ADHESIVE ON THE IMPACT RESISTANCE OF LAMINATED PLASTICS FOR WINDSHIELD APPLICA-TIONS

Joyce L. Illinger and Robert W. Lewis Aug 1973 20 p. ref. (DA Proj. 1TC-62105-A-329)

(AD-769735; AMMRC-TR-73-36) Avail: NTIS CSCL 11/9

Clamped acrylic-polycarbonate laminates show improved resistance to penetration over that shown by either material alone. Use of thermal bonding techniques or brittle adhesives to form a laminate result in a significant decrease in the ballistic resistance. The brittle adhesive induces spallation of the polycarbonate causing a significantly lower impact resistance and changes the mode of failure from ductile to brittle Flexible transparent polyurethane adhesives were synthesized with systematic variation in proportions of monomer and structure of the soft segments. Ballistic resistance of laminates using these adhesives was improved by forty percent. The change in relative amount of the hard segment had no significant effect upon the impact behavior. Strength of adhesive bonding was varied by a factor of two through changes in laminating temperature. No correlation between bond strength and ballistic performance was found. Thus, taminates using transparent flexible adhesives with sufficient bond strength to prevent delamination upon impact show ballastic resistance up to fifty percent better than the pest commercially available transparent impact resistant polymeric Author (GRA)

N74-16322*# Pennsylvania State Univ., University Park DETERMINATION OF CRITICAL NONDIMENSIONAL PARAMETERS IN AIRCRAFT DYNAMIC RESPONSE TO RANDOM INPUT Topical Report, Nov. 1972 - Jun. 1973

Stanley E. Hillard and Maurice M. Sevik Washington NASA Jan. 1974 153 р refs (Contract NAS8-27334)

(NASA-CR-2361) Avail: NTIS HC \$4.75 CSCL 01A

The critical parameters of subsonic jet aircraft response in a random atmospheric environment are determined. Equations of motion are presented for semiridid aircraft with a flexiable primary airfoil. However the analysis is easily extendable to include additional appendage flexibility. The analysis establishes the mechanical admittance values for pitching, plunging, and the first mode effects from wing elastic bending and torsion. Nondimensional parameters are established which allow the representation of all subsonic let transport aircraft with one nondimensional model. The critical parameters for random forcing are found to be aircraft relative mass, reduced natural and forcing frequencies, and Mach number. Turbulence scale lengths are found to be directly related to the critical values of reduced forcing frequency. Results are given for subsonic craft traveling at constant altitude. Specific values of admittance functions are tabulated at Mach numbers of 0.2, 0.5, and 0.7. The relative mass range covers all aircraft currently in operation. Author

N74-16377 Stanford Univ., Calif. ACOUSTIC SCATTERING FROM AN AIRCRAFT TRAILING VORTEX Ph.D. Thesis

Vernon Wayne Ramsey 1973 257 p Ayail: Univ. Microfilms Order No. 73-30463

Acoustic scattering from the velocity field of an aircraft trailing vortex is considered. Although the primary effort is devoted to scattering from the turbulence field, some new results are also presented for scattering from the mean flow component. The turbulence scattering analysis utilizes in combination the local homogeneity and eddy convection theories developed by R. A. Silverman. An interesting point demonstrated by the vortex scattering application is that these local homogeneity and convection models exist more naturally in combination than as isolated techniques. The analysis method thus formulated is especially well adapted to acoustic scattering from turbulent flows in which significant variations of mean flow and turbulence level occur over distances which are not large in comparison to the macroeddy size. Dissert, Abstr.

N74-16486# National Aerospace Lab., Tokyo (Japan). SOME CONSIDERATIONS ON THE PERFORMANCE OF THE **FAN JET ENGINE**

Tadao Torisaki, Mitsuo Morita, and Shizuo Sekine 1973 32 p refs. In JAPANESE; ENGLISH summary

(NAL-TR-317) Avail: NTIS HC \$3.75

Thermodynamic cycle calculations of the fan jet engine were made under several conditions of by-pass ratios, cycle pressure ratios, turbine inlet temperatures at sea level, and flight Mach numbers. The optimum condition for the fan engine was decided such that the thrust ratio reached a maximum, thus allowing the engine performance to be evaluated. Optimum fan engine designs were also obtained. Test results show that: (1) optimum condition is obtained when the ratio of the exit velocity of by-passed air flow to that of gas flow is equal to the product of the fan adiabatic efficiency and the low pressure turbine adiabatic efficiency, (2) optimum by passed ratio can be determined from the ratio of the flight velocity to the equivalent velocity of the gas generator, and (3) optimum fan pressure ratio can be considered as the function of flight Mach number Author only

N74-16493*# General Electric Co., Cincinnati, Ohio. Propulsion Div.

HYDROGEN-METHANE FUEL CONTROL SYSTEMS FOR TURBOJET ENGINES Final Report

J. S. Goldsmith and G. W. Bennett Oct. 1973 162 p refs (Contract NAS3-14319)

(NASA-CR-121247; R74AEG153; TM-73-489) Avail: NTIS HC \$10.25 CSCL 21E

Design, development, and test of a fuel conditioning and control system utilizing liquid methane (natural gas) and liquid hydrogen fuels for operation of a J85 jet engine were performed. The experimental program evaluated the stability and response of an engine fuel control employing liquid pumping of cryogenic fuels, gasification of the fuels at supercritical pressure, and gaseous metering and control. Acceptably stable and responsive control of the engine was demonstrated throughout the sea level power range for liquid gas fuel and up to 88 percent engine speed using liquid hydrogen fuel.

N74-16592*# Massachusetts Inst. of Tech., Cambridge. Aeroelastic and Structures Research Lab.

APPLICATION OF THE COLLISION-IMPARTED VELOCITY METHOD FOR ANALYZING THE RESPONSES OF CONTAIN-MENT AND DEFLECTOR STRUCTURES TO ENGINE ROTOR FRAGMENT IMPACT

Thomas P. Collins and Emmett A. Witmer Aug. 1973 250 p.

(Grant NGR-22-009-339)

(NASA-CR-134494; ASRL-TR-154-8) Avail: NTIS HC \$14.50 CSCL 20K

An approximate analysis, termed the Collision Imparted Velocity Method (CIVM), was employed for predicting the transient structural responses of containment rings or deflector rings which are subjected to impact from turbolet-engine rotor burst fragments. These 2-d structural rings may be initially circular or arbitrarily curved and may have either uniform or variable thickness; elastic, strain hardening, and strain rate material properties are accommodated. This approximate analysis utilizes kinetic energy and momentum conservation relations in order to predict the after-impact velocities of the fragment and the impacted ring segment. This information is then used in conjunction with a finite element structural response computation code to predict the transient, large deflection responses of the ring. Similarly, the equations of motion for each fragment are solved in small steps in time. Also, some comparisons of predictions with experimental data for fragment-impacted free containment rings are presented

N74-16597# Vereinigte Flugtechnische Werke-Fokker G.m.b.H., Bremen (West Germany). Space Div.

FATIGUE OF SPACECRAFT STRUCTURES Final Report Oct. 1973 172 p refs Prepared jointly with Natl. Aerospace

(Contract ESTEC-1846/72-AA)

(ESRO-CR(P)-322) Avail: NTIS HC \$10.75

Structure type and loads to which spacecraft is subjected are described. Similarities between spacecraft fatigue and aircraft fatigue are elaborated. Recommendations to improve testing procedures, involving reductions of test loads and a more realistic simulation of service loads, are given. A manual of design practices against fatique is proposed. **ESRO**

N74-16603# Naval Ship Research and Development Center, Annapolis, Md.

INVESTIGATION OF THE FATIGUE BEHAVIOR OF LARGE PROPELLERS Summary Report

W. Werchniak and E. J. Czyryca Oct. 1973 40 p refs (SF35342008: SF54541007)

(AD-769466; NSRDC-4166; NSRDC-28-662) Avail: NTIS CSCL 13/10

The report summarizes the findings of an experimental study on the fatigue behavior of a full-size aircraft-carrier propeller and a patrol craft propeller. Supplementary data on the fatigue characteristics of the manganese bronze propeller material were determined. Fatigue life predictions based on nominal stress and fracture mechanics concepts are analyzed and discussed. There is evidence that with accurate inputs as to stress levels and service loadings, the fatigue life of large propellers could be predicted from specimen data using a fracture mechanics anoroach Author (GRA)

N74-16693# Air Force Inst. of Tech., Wright-Patterson AFB Ohio. School of Systems and Logistics.

AN ANALYSIS OF THE ACQUISITION OF THE F-111A SIMULATORS M.S. Thesis

Billie Jatzen and Gerald J. Schulke Aug. 1973 62 p refs (AD-769202; SLSR-33-73B) Avail: NTIS CSCL 15/5

The Department of Defense (DOD) is concerned about the effectiveness of acquisitions with midrange dollar values. order to ascertain the effectiveness of a specific mid-range dollar value acquisition, the F-111 simulator acquisition was studied and analyzed. The report ascertains the effectiveness of the procurement of the F-111A simulator and comments on the strengths and weaknesses of the acquisition.

N74-16694# Air Force Inst. of Tech., Wright-Patterson AFB. Ohio. School of Systems and Logistics.

A COMPARATIVE ECONOMIC ANALYSIS OF A LIGHTER. THAN-AIR LOGISTICS SYSTEM M.S. Thesis

Roy D. Hammesfahr and Thomas R. Hawk Aug. 1973 60 p refs

(AD-769205; SLSR-39-73B) Avail: NTIS CSCL 15/5

Lighter-Than-Air (LTA) vehicles have been used since the 18th century for a variety of purposes, including research, surveillance, and personnel and material transportation. Successful. safe operation of airships is thought to be within the range of modern technology. A comparative economic analysis of available surface and air transportation systems is conducted to identify the least expensive system. In addition, an LTA system is proposed with its estimated cost factors and these costs are compared with the costs of the present day systems to see if the airship could meet logistics requirements and do so at a favorably competitive cost.

N74-16695# Air Force Inst. of Tech., Wright-Patterson AFB. Ohio. School of Engineering.

AN ANALYSIS OF THE PHASED INSPECTION SYSTEM FOR B-52H AIRCRAFT M.S. Thesis Barry L. Barnes Mar. 1973 113 p refs

(AD-769154: GSA/SM/73-2) Avail: NTIS CSCL 15/5

Analysis of a phased aircraft inspection system indicated a wide interval variability between inspections for various aircraft, when the interval was measured in flying hours, calendar days, or sorties between phases. Certain performance measures were identified, such as code 2 and code 3 system malfunctions, late take-offs, mission cancellations, inspect and repair manhours, and aircraft nonavailability. Based on the analysis, costs of phased inspections could apparently be reduced, without a loss of reliability, by increasing the number of flying hours between inspections. (Modified author abstract)

N74-16704*# Wisconsin Univ., Milwaukee.
NUMERICAL CALCULATIONS OF VELOCITY AND PRES-SURE DISTRIBUTION AROUND OSCILLATING AIRFOILS Theodore Bratanow, Akin Ecer, and Michael Kobiske Washington NASA Feb. 1974 86 p refs

(Grant NGR-50-007-001) (NASA-CR-2368) Avail: NTIS HC \$4.00 CSCL 01A

An analytical procedure based on the Navier-Stokes equations was developed for analyzing and representing properties of unsteady viscous flow around oscillating obstacles. A variational formulation of the vorticity transport equation was discretized in finite element form and integrated numerically. At each time step of the numerical integration, the velocity field around the obstacle was determined for the instantaneous vorticity distribution from the finite element solution of Poisson's equation. The time-dependent boundary conditions around the oscillating obstacle were introduced as external constraints, using the Lagrangian Multiplier Technique, at each time step of the numerical integration. The procedure was then applied for determining pressures around obstacles oscillating in unsteady flow. The obtained results for a cylinder and an airfoil were illustrated in the form of streamlines and vorticity and pressure distributions. Author

N74-16705# Dornier-Werke G.m.b.H., Friedrichshafen (West Germany)

COLLECTION OF EXPERIMENTAL DATA FOR AIRCRAFT AFTERBODY DRAG IN THE TRANSONIC AND SUPERSON-IC RANGE AND COMPARISON WITH THEORETICAL CALCULATION METHODS [ZUSAMMENSTELLUNG EXPERIMENTALIER UNTERLAGEN ZUM HECKWIDER-STAND VON FLUGKOERPERN IM TRANSSCHALL- UND IM UEBERSCHALLBEREICH UND VERGLEICH MIT THEORETISCHEN BERECHNUNGSMETHODEN

W. R. Schmidt and E. Herofer Bonn Bundeswehramt Apr. 1973 118 p. refs. in GERMAN: ENGLISH summary. Sponsored by Bundesmin, fuer Verteidigung

(BMVg-FBWT-73-27) Avail: NTIS HC \$9.00; Bundeswehramt 30 DM

For non-hoattailed afterhodies, mean value curves are determined for two- and three-dimensional flows. For the three-dimensional flow, the influence of the following parameters on the afterbody (without jet influence) is discussed and represented graphically: free stream Mach number, afterbody contour, nose contour, fineness ratio of the overall configuration, Reynolds number, angle of attack, boundary layer thickness, sting geometry, afterbody angle, and base-to-cylinder diameter ratio. The effect of the following jet parameters on the afterbody drag is described by a computer program and compared with experimental results; ratio of nozzle exit pressure to free stream pressure, nozzle-to-base diameter ratio, nozzle exit angle, jet Mach number in nozzle exit, ratio of specific heats of jet propellant, base bleeding, free stream Mach number, afterbody angle, and afterbody length.

N74-16707# National Aerospace Lab., Amsterdam (Netherlands)

CALCULATION OF THE DISPLACEMENT EFFECT IN TWO-DIMENSIONAL SUBSONIC ATTACHED FLOW AROUND AEROFOILS. EXAMPLES OF CALCULATIONS USING MEASURED DISPLACEMENT THICKNESSES

W. J. Piers and J. W. Slooff 8 May 1972 40 p refs Sponsored by the Directorate of Materiel Air, Roy, Neth. Air Force (NLR-TR-72116-U) Avail: NTIS HC \$5.00

Using measured displacement thickness, the classical displacement effect on lift and pressure distribution was calculated for a number of air foils in viscous attached flow. For this purpose the displacement concept boundary condition was incorporated in a potential flow calculation method that uses a discretized surface singularity distribution. Comparisons between results of the present calculations and experimental values of lift confirm earlier findings that the classical displacement concept tends to underestimate the total viscous lift loss, especially in cases with large trailing edge angle. This illustrates the need to take more appropriate care of the singular behavior of the flow near the Author (ESRO) trailing edge.

N74-16708# Technische Hogeschool, Delft (Netherlands). Dept. of Aeronautical Engineering.

QUASI HOMOGENEOUS APPROXIMATIONS FOR THE CALCULATION OF WINGS WITH CURVED SUBSONIC LEADING EDGES FLYING AT SUPERSONIC SPEEDS Ph.D.

Rene Coene Feb. 1973 180 p refs (VTH-173) Avail: NTIS HC \$12.00

A method is developed for the calculation of supersonic wings with planforms characterized by curved subsonic leading edges. The method extends the range of applicability of Germain's and Fenain's homogeneous flow theory, which is valid for supersonic wings with straight leading edges. With boundary conditions at the wing surface and leading edges of polynomial form, the boundary value problems can be reduced to algebraic problems which permit a systematic treatment. Author (ESRO)

N74-16711 Georgia Inst. of Tech., Atlanta. HELICOPTER BLADE-TIP STABILITY IN FORWARD FLIGHT Ph.D. Thesis

Keith Waldo Shipman 1972 132 p Avail: Univ. Microfilms Order No. 73-29022

A method for determining rotor blade flutter in forward flight is presented, developed, and applied in this thesis. The unsteady effects of the layers of the helical wake below the rotor are accounted for. Since the blade tangential velocity, and consequently, the aerodynamic damping vary with azimuth, the vorticity shed due to blade oscillations incipient to flutter will be contained within a region on either side of a critical azimuth position. Assuming this region to be small allows the wake system to be two-dimensionalized. The left deficiency function developed from the new theory is simplified for limiting cases and compared with earlier results obtained for fixed wings and helicopters in hover, It is found to be consistent with earlier results when simplified. The theory is then applied to bending-torsion flutter for the tip segment of a rotor blade. The previously shed wakes are found to be destabilizing. The flutter velocity becomes constant Dissert. Abstr. at higher advance ratios.

N74-16712 Kansas Univ., Lawrence. AN OPTIMAL CONTROL APPROACH TO AIRPLANE STABILITY AUGMENTATION SYSTEMS DESIGN Ph.D. Thesis

Omar H. Mardam-Bey 1973 198 p

Avail: Univ. Microfilms Order No. 73-30839

Airplane stability augmentation systems have been conventionally designed by using frequency domain techniques of control systems design. With the advances made in the field of optimal control systems, it became necessary to investigate the quality of stability augmentation systems that can be designed by using optimal control. The present work provides an optimal control method by which airplane stability augmentation systems can be designed, and a major objective of the approach is to provide an easily implementable stability augmentation system. An outline of the design procedure is presented. The airplane equations of motion are written in state space form as a linear, time-invariant state equation. Next, the airolane performance, and its desirable response to pilot commands, are described mathematically by a quadratic performance index. The performance index formulation is primarily based on the physical understanding of the airplane Dissert Abstr. performance requirements.

N74-16716*# General Electric Co., Pittsfield, Mass. A TEST TECHNIQUE FOR MEASURING LIGHTNING-INDUCED VOLTAGES ON AIRCRAFT ELECTRICAL CIR-**CUITS Final Report**

L. C. Walko Washington NASA Feb. 1974 78 p refs (Contract NAS3-14836)

(NASA-CR-2348; SRD-72-065) Avail: NTIS HC \$3.75 CSCL

The development of a test technique used for the measurement of lightning-induced voltages in the electrical circuits of a complete aircraft is described. The resultant technique utilizes a portable device known as a transient analyzer capable of generating unidirectional current impulses similar to lightning current surges, but at a lower current level. A linear relationship between the magnitude of lightning current and the magnitude of induced voltage permitted the scaling up of measured induced values to full threat levels. The test technique was found to be practical Author when used on a complete aircraft.

N74-16717*# National Aeronautics and Space Administration. Flight Research Center, Edwards, Calif.

A SIMPLIFIED FLIGHT-TEST METHOD FOR DETERMINING AIRCRAFT TAKEOFF PERFORMANCE THAT INCLUDES EFFECTS OF PILOT TECHNIQUE

Terry J. Larson and William G. Schweikhard Washington Feb. 1974 41 p refs

(NASA-TN-D-7603; H-802) Avail: NTIS, HC \$3.00 CSCL 01C

A method for evaluating aircraft takeoff performance from brake release to air-phase height that requires fewer tests than conventionally required is evaluated with data for the XB-70 airplane. The method defines the effects of pilot technique on takeoff performance quantitatively, including the decrease in acceleration from drag due to lift. For a given takeoff weight and throttle setting, a single takeoff provides enough data to

establish a standardizing relationship for the distance from brake release to any point where velocity is appropriate to rotation. The lower rotation rates penalized takeoff performance in terms of ground roll distance; the lowest observed rotation rate required a ground roll distance that was 19 percent longer than the highest. Rotations at the minimum rate also resulted in lift-off velocities that were approximately 5 knots lower than the highest rotation rate at any given lift-off distance. Author

N74-16718*# McDonnell-Douglas Corp., Long Beach, Calif. STUDY OF QUIET TURBOFAN STOL AIRCRAFT FOR SHORT-HAUL TRANSPORTATION. VOLUME 1: SUMMARY **Final Report**

Washington NASA Feb. 1974 157 p

(Contract NAS2-6994)

(NASA-CR-2353) Avail: NTIS HC \$5.00 CSCL 01C

Conceptual designs of Quiet Turbofan STOL Short-Haul Transport Aircraft for the mid-1980 time period are developed and analyzed to determine their technical, operational, and economic feasibility. A matrix of aircraft using various high-lift systems and design parameters are considered. Variations in aircraft characteristics, airport geometry and location, and operational techniques are analyzed systematically to determine their effects on the market, operating economics, and community acceptance. The total systems approach is considered to be critically important in analyzing the potential of STOL aircraft to reduce noise pollution and alleviate the increasing air corridor and airport congestion. Author

N74-16719*# Nielsen Engineering and Research, Inc., Mountain View. Calif.

CALCULATION OF THE LONGITUDINAL AERODYNAMIC CHARACTERISTICS OF STOL AIRCRAFT WITH EXTERNAL-LY-BLOWN JET-AUGMENTED FLAPS Final Report

Marnix F. E. Dillenius, Michael R. Mendenhall, and S. B. Spangler Washington NASA Feb. 1974 197 p refs (Contract NAS2-5247)

(NASA-CR-2358) Avail: NTIS HC \$5.50 CSCL 01C

A theoretical investigation was made to develop methods for predicting the longitudinal aerodynamic characteristics of externally-blown, jet-augmented wing-flap combinations. A potential flow analysis was used to develop two models: a wing-flap lifting surface model and a high-bypass-ratio turbofan engine wake model. Use of these two models in sequence provides for calculation of the wing-flap load distribution including the influence of the engine wake. The method can accommodate multiple engines per wing panel and part-span flaps but is limited to the case where the flow and geometry of the configuration are symmetric about a vertical plane containing the wing root chord. Comparisons of predicted and measured lift and pitching moment on unswept and swept wings with one and two engines per panel and with various flap deflection angles indicate satisfactory prediction of lift and moment for flap deflections up to 30 to 40 degrees. At higher flap angles with and without power, the method begins to overpredict lift, due probably to the appearance of flow separation on the flaps. Author

N74-16720*# National Aeronautics and Space Administration. Ames Research Center, Moffett Field, Calif.

COMPUTER PROGRAMS FOR ESTIMATING AIRCRAFT TAKEOFF AND LANDING PERFORMANCE

Jeff V. Bowles and Thomas L. Galloway Jul. 1973 84 p. refs (NASA-TM-X-62333) Avail: NTIS HC \$7.25 CSCL 01C

A set of computer programs has been developed to estimate the takeoff and landing maneuver of a given aircraft. The program is applicable to conventional, vectored lift and powered-lift concept aircraft. Portions of the program may also be used to evaluate the static performance of these types of aircraft. The aircraft is treated as a point mass confined to motion in a vertical plane. and rotational dynamics have been neglected. The required input is described and a sample case is presented. Author

N74-16722# National Transportation Safety Board, Washington, D.C. Bureau of Aviation Safety.

AIRCRAFT ACCIDENT REPORTS: BRIEF FORMAT, SUPPLEMENTAL ISSUE, 1972 ACCIDENTS

3 Dec. 1973 106 p

(NTSB-BA-73-10) Avail: NTIS HC \$8.50

Reports of aircraft accidents and incidents that occurred in 1972 and have not been included in a prior issue of briefs are presented. Included are eight U. S. Air Carrier Accidents, 47 U. S. Air Carrier incidents, 17 U. S. General Aviation accidents, and 50 U. S. General Aviation incidents. Three Foreign Air Carrier accidents, one Foreign Air Carrier accident which occurred outside the U. S., and 19 Foreign General Aviation accidents that were investigated by the National Transportation Safety Board are also included. This publication is the final issue of Briefs of Accidents that occurred in calendar year 1972. Author

N74-16726*# Boeing Commercial Airplane Co., Seattle, Wash, THE RESULTS OF A HIGH-SPEED WIND TUNNEL TEST TO INVESTIGATE THE EFFECTS OF THE NASA REFAN JT8D ENGINE NACELLES ON THE STABILITY AND CONTROL CHARACTERISTICS OF THE BOEING 727 **AIRPLANE**

E. A. Kupcis Dec. 1973 52 p ref

(Contract NAS3-17842)

(NASA-CR-134545; D6-41499) Avail: NTIS HC \$5.75 CSCL

A high speed wind tunnel test was conducted to investigate the effects of the NASA Refan JT8D engine nacelles on the stability and control characteristics of the Boeing 727 airplane. The test was performed at the Calspan Corporation 8x8 ft. (2.44x2.44 m.) transonic wind tunnel. Both the 727-200 and -100 models were tested. A small nose-down pitching moment increment and a slight increase in longitudinal stability were noted due to the Refan nacelles. The directional stability of the 727-200 airplane increased up to 10 percent. A smaller improvement was observed on the 727-100 model. In general, the high speed stability and control characteristics of the basic airplane are not significantly altered by the Refan nacelle installation.

N74-16729*# Boeing Commercial Airplane Co., Seattle, Wash. Preliminary Design Dept.

ADVANCED SUBSONIC LONG-HAUL TRANSPORT TERMINAL AREA COMPATIBILITY STUDY. VOLUME 1: COMPATIBILITY ASSESSMENT

Feb. 1974 186 p refs

(Contract NAS1-12018)

(NASA-CR-132367; O6-22561-Vol-1) Avail: NTIS HC \$12.50 CSCL 01C

An analysis was made to identify airplane research and technology necessary to ensure advanced transport aircraft the capability of accommodating forecast traffic without adverse impact on airport communities. Projections were made of the delay, noise, and emissions impact of future aircraft fleets on typical large urban airport., Design requirements, based on these projections, were developed for an advanced technology, long-haul. subsonic transport. A baseline aircraft was modified to fulfill the design requirements for terminal area compatibility. Technical and economic comparisons were made between these and other aircraft configured to support the study.

N74-16730*# Boeing Commercial Airplane Co., Seattle, Wash. Preliminary Design Dept.

ADVANCED SUBSONIC LONG-HAUL TRANSPORT TERMINAL AREA COMPATIBILITY STUDY. VOLUME 2: RESEARCH AND TECHNOLOGY RECOMMENDATIONS

Feb. 1974 159 p refs

(Contract NAS1-12018)

(NASA-CR-132368; D6-22562-Vol-2) Avail: NTIS HC \$11.00 CSCL 01C

The Terminal Area Compatibility (TAC) study is briefly summarized for background information. The most important research items for the areas of noise congestion, and emissions

are identified. Other key research areas are also discussed. The 50 recommended research items are categorized by flight phase. technology, and compatibility benefits. The relationship of the TAC recommendations to the previous ATT recommendations is discussed. The bulk of the document contains the 50 recommended research items. For each item, the notential payoff, state of readiness, recommended action and estimated cost and schedüle are given.

N74-16732# Centre d'Essai Aeronautique, Toulouse (France). ENDURANCE TESTS ON TRANSPORT AIRCRAFT COCKPIT WINDOW GLASSES (ESSAIS D'ENDURANCE SUR GLACES D'AVION DE TRANSPORT

1973 12 p In FRENCH Presented at the Intern. Seminar on Simulation and Space, Toulouse, 10-14 Sep. 1973 Avail: NTIS HC \$4.00

Results of endurance tests on cockpit window glazing for the European Airbus are reported. The objective of these tests was to demonstrate that if this glazing were exposed to varying environmental conditions during large number of flights, no rupture, delamination or leak would occur, and transparency would remain at an acceptable level. The test parameters are defined. and simplifications are introduced for simulation. The test installation is comprised of a wind tunnel with refrigerator, and

N74-16733# Aerospatiale Usines de Toulouse (France). USE OF SIMULATION FOR THE DEVELOPMENT OF

CONCORDE UTILISATION DE LA SIMULATION DANS LE DEVELOPPEMENT DE CONCORDE

R. Deque and J. Tardy 5 Aug. 1973 10 p In FRENCH Presented at the Intern. Seminar Simulation and Space, Toulouse, 10-14 Sep. 1973

Avail: NTIS HC \$4.00

The flight simulator for the Concorde aircraft development is described. Several means of simulation have been used, analog as well as hybrid. 9,500 hours of simulation have been accomplished up to now with the simulator, 3,500 of which were completed before the first flight of the 001 prototype. The tests and corresponding investigations are in 5 categories, which are successively examined: perfectioning of the aircraft and its systems, test flight preparation and crew training, crew workload, operational studies together with Eurocontrol, and preparation for the certification of the aircraft.

Royal Aircraft Establishment, Farnborough (England).

IN SITU NON-DESTRUCTIVE TESTING OF AIRCRAFT STRUCTURES BY HOLOGRAPHIC INTERFEROMETRY

M. P. Wright Feb. 1973 13 p refs

(RAE-TR-72218; BR33628) Avail: NTIS HC \$4.00

An investigation into a method of non-destructively testing part of an aircraft in situ is described. The method used was double-exposure holographic interferometry whereby two holograms of an object are recorded on the same holographic plate, the only difference being that the object is strained between exposures. The holograms were taken with a pulsed ruby laser and the strain applied by gentle heating. Results indicate that the technique could be successfully applied, for example, to a complete aircraft in a hangar.

N74-16737# Technische Hogeschool, Delft (Netherlands). Dept. of Aeronautical Engineering.
COLUMN FAILURE OF THIN-WALLED COMPRESSION

MEMBERS IN AIRCRAFT WINGS AS AFFECTED BY WALL IMPERFECTION AND CRUSHING

A. VanDerNeut Jun. 1973 22 p refs (VTH-175) Avail: NTIS HC.\$4.25

The stiffness reduction of the composing walls of thin-walled compression members, due to initial waviness of the walls, affects the bending stiffness and consequently the buckling load in column failure. When loaded in bending, thin aircraft wings, and consequently the compression members of the wing panels attain noticeable curvature. The bending moment in these members is

maximal in the center of the bays between successive ribs and minimal at the supporting ribs (crushing). Therefore, their bending stiffness varies along the bay and differs from the bending stiffness in the absence of crushing. For a representative model the buckling load is established as affected by the crushing parameter. Strength reduction due to crushing is compared to reduction due to wall Author (ESRO) imperfection alone

N74-16738# Texas A&M Univ., College Station. Engineering Experiment Station

RESEARCH ON AIRCRAFT DYNAMICS FOR SUBSONIC FLIGHT Final Report, 1 Jun. 1971 - 31 Aug. 1973 William P. Jones 28 Sep. 1973 8 p. refs.

(Grant DA-ARO(D)-31-124-71-G153)

(AD-770540: TEES-2809-73-01) Avail: NTIS CSCL 01/3

The report on helicopter dynamics is submitted as a collection of abstracts of papers published or to be published. The principal authors of the papers listed are J. Bicknell, W. P. Jones, and A. G. Parker

N74-16739# Air Force Systems Command, Wright-Patterson AFB. Ohio. Foreign Technology Div.
MEASUREMENT OF PRESSURE ON AN OSCILLATING

AILERON IN TRANSONIC FLOW

V. V. Mazarenko and T. P. Nevezhina 29 Oct. 1973 15 p. refs Transl, into ENGLISH from Izv. Akad, Nauk SSSR, Mekh. Zhidk, Gaza (Moscow), no. 2, 1972 p 179-185 (AD-769982; FTD-HT-23-209-74) Avail: NTIS CSCL 01/3

The report gives the results of pressure measurements on an oscillating aileron in plane-parallel transonic flow. measurements were made using pressure sensors inside the model in a regime of forced oscillations at Mach - 0.974. GRA

N74-16740# Kaman Aerospace Corp., Bloomfield, Conn. MAINTAINABILITY ANALYSIS OF MAJOR HELICOPTER COMPONENTS Final Report

Thomas N. Cook, Robert L. Young, and Frank E. Starses Aug. 1973 316 p

(Contract DAAJ02-72-C-0065; DA Proj. 1F1-62205-A-119) (AD-769941: USAAMRDL-TR-73-43) Avail: NTIS CSCL 01/3

The report examines the factors responsible for the high man-hour cost of maintaining current-inventory Army helicopters. Major components of six helicopter models were analyzed to identify the significant man-hour consumers on each aircraft. Causes for maintenance were established in terms of failure modes, maintenance frequency, and average repair time. Major component replacement tasks were structured in terms of specific time elements, and important factors affecting maintenance task performance were established. The report documents the results of three study tasks. Using data derived from the analysis, a checklist has been developed for use in maintainability analyses of future helicopter designs. (Modified author abstract)

N74-16741# General Dynamics/Convair, San Diego, Calif. Aerospace Div.

DESIGN AND FABRICATION OF A BORON/ALUMINUM COMPOSITE WING BOX TEST SPECIMEN Final Report, Mar. 1972 - May 1973

William F. Wennhold Jul. 1973 147 p refs (Contract N62269-72-C-0414)

(AD-770203; CASD-NSC-73-005) Avail: NTIS CSCL 01/3 The report summarizes the design, analysis, fabrication and testing of a wing box specimen using boron aluminum as the primary structural material. The primary purpose of the program was to demonstrate the feasibility of using boron-aluminum in a major aircraft structural component. The wing section selected is typical of many aircraft wing structures and simulated an integral wing fuel tank section capable of withstanding internal pressure in addition to the basic bending and torsion loads. (Modified author abstract)

N74-16742# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

DROP AND STATIC TESTS ON A TENTH-SCALE MODEL OF AN AIR CUSHION LANDING SYSTEM (ACLS) M.S. Thesis

Anthony Rodrigues Sep. 1973 161 p refs (AF Proj. 1369)

(AD-770026; GA/ME/73-3) Avail: NTIS CSCL 01/3

An experimental investigation of the performance of an Air Cushion Landing System (ACLS) on a one-tenth scale model of a CC-115 Canadian aircraft is discussed. Several different types of tests were conducted on an extended version of the ACLS trunk at simulated fullscale trunk pressures of 315 psfg, out of ground effect, and 342 psfg, in ground effect. Cushion pressure was 160 psfg, in ground effect, during hover. The experiments involved: vertical drop tests to measure the effects of sink rate and initial attitude between full-sclae sink rates of 3.0 and 12.5 fps, and attitudes of pitch and roll from 0.0 to 12.0 and 0.0 to 7.5 degrees, respectively; static equilibrium tests to measure vertical stiffness, roll stiffness, pitch stiffness, and floor pressure exerted by the ACLS with loads up to 4.1 times the aircraft landing weight; and braking tests to obtain the effects of changing brake pillow thickness between simulated full-scale heights of 0.0 inches and 26.0 inches. (Modified author abstract)

N74-16743# Aerospace Medical Research Labs.. Wright-Patterson AFB, Ohio.

HIGH ACCELERATION COCKPIT: THE MANEUVERING COUNTERMEASURE

Philip V. Kulwickí, John P. Lyons, and Richard L. Ravenelle Sep. 1973 18 p. Presented at the AFSC Sci. and Eng. Symp., Kirtland AFB, Ohio, 2-4 Oct. 1973 (AF Proj. 7184)

(AD-770287; AMRL-TR-73-93) Avail: NTIS CSCL 01/3

The high acceleration cockpit represents an innovative approach to cockpit design which provides a unique blend of pilot capabilities and airplane performance potential, especially for the counter air mission. By altering the standard cockpit geometry, positive airplane control and tactical decisions are anabled during levels of maneuvering acceleration well above 7G. The result, in the context of emerging fighter capability, is a dramatic increase in combat effectiveness and operational advantage.

Author (GRA)

N74-16744# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

STUDY OF REVERSE-FLOW CHARACTERISTICS OF A TIP FAN AND AN EJECTOR M.S. Thesis

Ernest Kunstadt Oct. 1973 69 p refs

(AD-770080; GAM/ME/73A-1; AFFDL-TR-73-73) Avail: NTIS CSCL 21/5

An investigation was carried out in order to determine the reverse-flow characteristics of an ejector and a tip-turbine fan. The components tested a model TD-530 ejector and model TD-457 tip-turbine fan manufactured by Tech Development Corporation of Dayton, Ohio. A plenum chamber and air flow system were designed and constructed to permit variation of flow rates and back pressures, as well as fan and ejector driving pressures. Measurements of pressures and temperatures were taken in order to determine air mass flow rates of drive and inlet air as a function of back pressure. Fan speed for the tip-turbine fan was also monitored as a function of back pressure, and various ejector exit conditions were studied to determine their affect on basic ejector performance. The secondary air mass flow rates for both devices were found to be practically linear functions of back pressure, up to and including the reverse-flow regime. The results of these studies are presented in graphical form and discussed.

N74-16746# Army Aviation Systems Command, St. Louis, Mo.

MAJOR ITEM SPECIAL STUDY (MISS) AH-1G DRIVESHAFT ASSY, MAIN TRANSMISSION TO ENGINE Interim Report,

1 Jan. 1964 - 30 Jun. 1972

Nov. 1973 23 p refs

(AD-770498; USAAVSCOM-TR-73-27) Avail: NTIS CSCL 01/3

The report is designed to illustrate cost savings which would result from specific efforts in the areas of product improvement in quality and design. For the purpose of this study the cost savings produced in the area of product improvement are based on total elimination of a certain failure mode or modes. GRA

N74-16747# Aerospace Medical Research Labs., Wright-Patterson AFB, Ohio.

EFFECT OF MODIFIED SEAT ANGLE ON AIR TO AIR WEAPON SYSTEM PERFORMANCE UNDER HIGH ACCELERATION Final Report

D. B. Rogers, A. B. Ashare, K. A. Smiles, J. W. Frazier, and V. D. Skowronski, Jul. 1973, 19 p. (AF Proj. 7222)

(AD-770271; AMRL-TR-73-5) Avail: NTIS CSCL 01/3

In air to air combat, the weapons system that has the highest agility and G maneuvering capability has a decided advantage over a less capable system. A method of increasing the G tolerance of the human portion of the system is the use of reclining seats. The modified closed loop Dynamic Environment Simulator system was employed as the experimental test bed for investigation of centrifuge pilots in the reclined position. The centrifuge pilots were required to fly through a series of G on G combat maneuvers and to perform target lock-on and boresight cannon firing through a predictive gunsight reticle at a projected enemy aircraft. The performance scoring was measured as number of ballistic rounds delivered on the target. (Modified author abstract)

N74-16749# General Dynamics/Fort Worth, Tex. Convair Aerospace Div.

AIR CRAFT ANTISKID ANALYSIS VERIFICATION AND REFINEMENT Final Report, Dec. 1970 - Apr. 1973
Byron H. Anderson Sep. 1973 365 p refs

(Contract F33615-71-C-1109; AF Proj. 1369)

(AD-770300: AFFDL-TR-73-70) Avail: NTIS CSCL 01/3

A program for verifying and refining a previously developed aircraft antiskid performance and system compatibility analysis procedure is described. Analysis verification was performed by comparing antiskid system operation as predicted by the analytical procedures with that recorded during laboratory testing. The laboratory tests were conducted at the Air Force Flight Dynamics Laboratory Landing Gear Test Facility at Wright-Patterson Air Force Base, Ohio using a set-up consisting of F-111 aircraft main landing gear, tire, wheel, brake, hydraulic brake actuation system and several antiskid control circuit variations. (Modified author abstract)

N74-16750# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

AN EXPERIMENTAL STUDY OF ATTENUATION OF SHOCK WAVES IN AIRCRAFT FUEL TANKS M.S. Thesis
John R. Breuninger, Jr. Jun. 1973 73 p. refs

(AD-769930: GA/MC/73-3) Avail: NTIS CSCL 01/3

When a full, or partially full, aircraft fuel tank is penetrated by a high velocity projectile, a phenomenon known as hydraulic ram effect, created by the passage of a projectile through the fluid often causes massive damage to the tank. This study was conducted to continue experimental investigation of the attenuation of the hydraulic ram effect through addition of a gas to a fuel-foam mixture. The tests were conducted using two types of projectile (1/2 in. steel spheres and 0.50 caliber ogival projectiles) which were fired into a test tank. The tank was filled first with water and then a water/Pneumacel mixture. Four pressure transducers were located in the back wall of the tank and two pressure transducers were located inside the tank to measure the pressure pulses. (Modified author abstract) GRA

N74-16751# Rockwell International Corp., Los Angeles Calif. Aircraft Div

STOLTACTICAL AIRCRAFT INVESTIGATION, EXTERNALLY BLOWN FLAP. VOLUME 2: DESIGN COMPENDIUM Final Report, 10 Jun. 1971 - 10 Dec. 1972

Marshall H. Roe, Dirk J. Renselaer, and Ralph A. Quam. Apr. 1973 177 p. refs. 6 Vol.

(Contract F33615-71-C-1760; AF Proj. 643A)

(AD-770110; NA-72-868-Vol-2; AFFDL-TR-73-20-Vol-2) Avail: NTIS CSCL 01/1

The basic objective of the work reported herein was to provide a broader technology base to support the development of a medium STOL Transport (MST) airplane. This work was limited to the application of the externally blown flap (EBF) powered lift concept. The technology of EBF STOL aircraft has been investigated through analytical studies, wind tunnel testing, flight simulator testing, and design trade studies. The results obtained include development of methods for the estimation of the aerodynamic characteristics of an EBF configuration. STOL performance estimation methods, safety margins for takeoff and landing, wind tunnel investigation of the effects of varying EBF system geometry parameters, configuration definition to meet MST requirements, trade data on performance and configuration requirement variations, flight control system mechanization trade data, handling qualities characteristics; piloting procedures, and effects of applying an air cushion landing system to the MST. (Modified author abstract)

N74-16752# Rockwell International Corp., Los Angeles Calif. Aircraft Div.

STOL TACTICAL AIRCRAFT INVESTIGATION-EXTERNALLY BLOWN FLAP. VOLUME 5: FLIGHT CONTROL TECHNOLOGY. PART 2: SIMULATION STUDIES/FLIGHT CONTROL SYSTEM VALIDATION Final Report, 10 Jun. 1971 - 10 Dec. 1972

James E. Campbell, William K. Elsanker, and Victor H. Okumoto Apr. 1973 210 p. refs. 6 Vol.

(Contract F33615-71-C-1760; AF Proj. 643A) (AD-770449; NA-72-868-Vol-5-Pt-2;

AFFDL-TR-73-20-Vol-5-Pt-2) Avail: NTIS CSCL 01/3

The basic objective of the work reported was to provide a broader technology base to support the development of a medium STOL Transport (MST) airplane. This work was limited to the application of the externally blown flap (EBF) powered lift concept. From an overall assessment of study results, it is concluded that the EBF concept provides a practical means of obtaining STOL performance for an MST with relatively low risk. (Modified author abstract)

N74-16753# Rockwell International Corp., Los Angeles Calif.

STOL TACTICAL AIRCRAFT INVESTIGATION-EXTERNALLY BLOWN FLAP. VOLUME 6: AIR CUSHION LANDING SYSTEM TRADE STUDY Final Report, 10 Jun. 1971 - 10 Dec. 1972

Robert G. Gustavson Apr. 1973 94 p refs 6 Vol. (Contract F33615-71-C-1760; AF Proj. 643A)

(AD-770448; NA-72-868-Vol-6; AFFDL-TR-73-20-Vol-6) Avail: NTIS CSCL 01/3

The primary objective of this trade study is to directly install the air cushion landing system (ACLS) as developed by the Flight Dynamics lab, in the MST configuration and compare it with a conventional landing gear. The initial ACLS design was for as large a cushion area as practical. Direct performance comparisons with conventional gear at the same CBR or field rating proved to be difficult with this size cushion. It was decided to try a second ACLS design with four times the cushion pressure of the initial concept. These concepts are called low- and high-pressure ACLS designs, respectively.

N74-16754# Honeywell, Inc., Minneapolis, Minn. Systems and Research Div.

AN INVESTIGATION OF AIRBORNE DISPLAYS AND CONTROLS FOR SEARCH AND RESCUE (SAR). VOLUME 9: PROJECT SEA SCANNER AVIONICS AND SENSOR SYSTEM Final Report, Oct. 1972 - Jul. 1973

R. J. Kirk, F. S. Malver, and W. F. Helmbrecht Jul. 1973 108 p. refs. 9 Vol.

(Contract N00014-69-C-0460: NR Proj. 213-072)

(AD-770548; Rept-12609-FRI-Vol-9; JANAIR-73-1002) Avail: NTIS CSCL 06/7

A study was conducted to define and select an avionics and sensor system for a U. S. Coast Guard multimission fixed-wing twin-jet aircraft. The system requirements were compiled from previous concept definition studies done under this contract for a search and rescue helicopter and from analysis of mission scenarios fitted to the unique USCG missions. Study tasks included definition of the avionics and sensor requirements to meet mission goals consistent with constraints of a preselected baseline aircraft. A full complement of equipment was recommended along with interface drawings and installation layouts. A system performance specification and subsystem procurement specifications were developed.

N74-16755# Ministry of Defence, London (England). REPORT ON THE CONFERENCE ON TRANSPARENT AIRCRAFT ENCLOSURES

N. S. Corney Jun. 1973 57 p Conf. held at Las Vegas, Nev., 5-8 Feb. 1973

(AD-769372; D-Mat-195; BR36095) Avail; NTIS CSCL 01/3 The report describes papers presented at a conference which was the most recent of a series which has been held over a period of many years sponsored in the main by the U.S. Air Force Materials Laboratory. All aspects of transparencies for fixed wing aircraft and helicopters were covered including rather remote topics such as bird habits and migration studied in connection with the hazard of bird impact on transparencies. From the materials aspect, the most interesting papers were those dealing with experience in the handling and application of polycarbonate as a glazing material. Several papers dealt with the experience gained in service with helicopter transparencies; the accumulation of scratches from general use and from wiper action constitute the most serious deficiency in performance. The need for good hard coatings for plastics materials was emphasized throughout the conference. The design of transparencies to withstand bird impact was the subject of one complete session. Use of laminated polycarbonate with or without glass facing plies constitutes an assembly which will resist four lb birds, but for high reliability such as is needed on civil aircraft the use of all glass panels is common; the introduction of high strength glass enables designs to approach the low overall weight of plastics for the same impact resistance. (Modified author abstract)

N74-16811# Centre d'Essai Aeronautique, Toulouse (France).
ROLE OF COMPUTERIZED SIMULATION IN THE PERFECTING AERONAUTICAL EQUIPMENTS OR SYSTEMS [CONTRIBUTIONS DE LA SIMULATION SUR CALCULATRICE A LA MISE AU POINT D'EQUIPEMENTS OU SYSTEMES AERONAUTIQUES]

Sep. 1973 29 p. In FRENCH Presented at the Intern. Seminar Simulation and Space, Toulouse, 10-14 Sep. 1973

Avail: NTIS HC \$4.50

The application of new methods of optimization, which exclude empirism by using functional equations verified by experimental results, and computer-aided simulation procedures, are discussed. These methods were applied to aircraft equipment, notably a hydraulic pump and an air intake system for the Concorde aircraft's air conditioning installation. In both cases it is shown that the simulation leads to optimal results.

N74-16870# Army Foreign Science and Technology Center, Charlottesville, Va.

COMPOSITION AND CHEMICAL STABILITY OF MOTOR

Z. A. Zablina 1972 357 p refs Transl into ENGLISH of the mono. "Sostav i Khimicheskaya Stabilnost Motornykh Topliv" Moscow, 1972 279 p

(AD-770538; FSTC-HT-23-1690-73) Avail: NTIS CSCL 21/4
The work concerns the chemical composition of hydrocarbon motor fuels and the chemical changes that occur from the time the fuels are produced until they are burned in the engine. Chapter

One discusses both the hydrocarbon composition of fuels and the non-hydrocarbon ingredients. Chapter two deals with chemical changes during storage and in engine fuel systems. Chapter Three treats problems of chemical stabilization (chiefly, use of additives). Chapter Four reviews methods for determining the chemical composition of fuels. Chapter Five gives methods for estimating the tendency of fuels toward change. The work is intended for engineers and technicians involved in all phases of production and use of various types of motor fuels, as well as for scientists in petrochemical and refining work. Author (GRA)

N74-16887*# Magnavox Research Labs., Torrance, Calif.
ADVANCED TRACKING AND DATA RELAY EXPERIMENTS STUDY: MULTIMODE TRANSPONDER EXPERIMENT EQUIPMENT Final Report, Sep. 1972 - Sep. 1973 R. S. Cnossen 15 Sep. 1973 29 p refs

(Contract NAS5-21824)

(NASA-CR-132930; R-4741) Avail: NTIS HC \$4.50

Plans and implementation concepts were developed for a series of experiments utilizing a Multimode Transponder mounted in an aircraft working either through a spacecraft or directly with a ground station which would simulate a TDRSS user working through the TDRSS. The purpose of the experiments is to determine the best modulation and encoding techniques for combating RFI in discreet bands. The experiments also determine the feasibility and accuracy of range and range rate measurements with the various modulation and encoding techniques. An analysis of the Multimode Transponder and ground support equipment is presented, and the additional equipment required to perform the experiments described above is determined. Author

N74-16903# Forschungsinstitut fuer Hochfrequenzphysik. Werthhoven (West Germany).

FURTHER STUDIES ON SPEECH INTELLIGIBILITY WITH FREQUENCY-MODULATION COMMUNICATION SYSTEMS **UNDER FADING CONDITIONS**

D. E. Marquart Oct. 1973 14 p refs Repr. from 16th Symp. on Tactical Satellite Commun. (The Hague) 19 Sep. 1973 p 45-54

(Rept-5-73) Avail: NTIS HC \$4.00

The applicability of a method for computing articulation scores to be expected with FM communication systems under arbitrary fading conditions to an experimental helicopter-satellite link is tested. A description of the experiment with respect to intelligibility measurements is followed by the analysis of calculated and measured results which are in good agreement. A discussion of some additional results derived during performance and analysis of experiments is included. ESRO

N74-16906# Army Limited War Lab., Aberdeen Proving Ground, Md.

EVALUATION OF VOICE RECORDERS FOR AIRCRAFT Stanley D. Peirce Oct. 1973 11 p (AD-770517; LWL-TR-74-04) Avail: NTIS CSCL 14/3

The U.S. Army Land Warfare Laboratory evaluated existing tape recorder/reproducers for use as voice monitors in Army surveillance and observation aircraft. It was concluded that none of the tested recorders are capable of meeting the DA Approved Performance Characteristics for Recorder, Voice for Surveillance and Observation Aircraft. However, development of a suitable recorder is well within the state-of-the-art. Author (GRA)

N74-16953*# Advisory Group for Aerospace Research and Development, Paris (France).

ROLL PLANE ANALYSIS OF ON-AIRCRAFT ANTENNAS W. D. Burnside (Ohio State Univ.), R. J. Marhefka (Ohio State Univ.), and C. L. Byu (Ohio State Univ.) 30 Jan. 1974 22 p. refs Presented at 26th Tech. Meeting of the Avionics Panel of AGARD, Munich, Nov. 1973 Prepared by Ohio State Univ. (Grant NGR-36-008-144)

(NASA-CR-136815) Avail: NTIS HC \$3.25 CSCL 09E

Roll plane radiation patterns of on-aircraft antennas are analyzed using high frequency solutions. Aircraft-antenna pattern performance in which the aircraft is modelled in its most basic form is presented. The fuselage is assumed to be a perfectly conducting elliptic cylinder with the antennas mounted near the top or bottom. The wings are simulated by arbitrarily many sided flat plates and the engines by circular cylinders. The patterns in each case are verified by measured results taken on simple models as well as scale models of actual aircraft.

N74-16960# Information Systems, Menlo Park, Calif. ANTENNA MODELING OF THE KC-135 Final Technical Report

G. J. Burke, E. S. Selden, and K. Hazard Jul. 1973 183 p. (Contract F30602-72-C-0135)

(AD-769913; IS-R-73/02; RADC-TR-73-195) Avail: NTIS CSCL

Geometry generators compatible with the RADC Antenna Modeling Program (AMP) and augmented for the KC-135 aircraft electronic test bed configuration for the HF band. Author (GRA)

N74-16995*# American Airlines, Inc., Tulsa, Okla FLIGHT EVALUATION OF TWO SEGMENT APPROACHES FOR JET TRANSPORT NOISE ABATEMENT

Robert A. Rogers, Bernard Wohl, and C. M. Gale Jun. 1973 180 p refs

(Contract NAS2-6501)

(NASA-CR-114735) Avail: NTIS HC \$12.00 CSCL 20A

A 75 flight-hour operational evaluation was conducted with a representative four-engine fan-jet transport in a representative airport environment. The flight instrument systems were modified to automatically provide pilots with smooth and continuous pitch steering command information during two-segment approaches. Considering adverse weather, minimum ceiling and flight crew experience criteria, a transition initiation altitude of approximately 800 feet AFL would have broadest acceptance for initiating two-segment approach procedures in scheduled service. The profile defined by the system gave an upper glidepath of approximately 6 1/2 degrees. This was 1/2 degree greater than inserted into the area navigation system. The glidepath error is apparently due to an erroneous along-track, distance-to-altitude profile.

Author

N74-16997# Calspan Corp., Buffalo, N.Y. X-22A FIXED-BASE GROUND SIMULATOR FACILITY Final Report

T. J. Gavin and R. D. Till Oct. 1973 42 p refs

(Contract N00019-72-C-0380)

(AD-769942; CALSPAN-AK-5113-F-1) Avail: NTIS CSCL 01/3

The report presents a description of the X-22A fixed-base ground simulator facility. The simulation will be used in conjunction with the X-22A V/STOL aircraft which is a unique research tool used in performing flying qualities research. The simulator duplicates the X-22A aircraft and its systems for varying pertinent pitch, roll, yaw and thrust stability derivatives. high-speed process control digital computer is used to solve the X-22A equations of motion including the nonlinear characteristics associated with transition, and provides the signals for the displays and variable stability system. The X-22A ground simulator

is a facility that consists of an air conditioned flight simulation cockpit and a mobile van. (Modified author abstract)

N74-17001# Cincinnati Univ., Ohio.

RESEARCH AND DESIGN OF A SEVENTY-SIX (76) FOOT SPAN AIRCRAFT MAINTENANCE HANGER WITH QUAR-TER SHELL ENDWALLS Final Technical Report, 21 Dec. 1971 - 1 Feb. 1973

David L. Hunt, Jack R. Farrah, and James M. Alexander Jul. 1973 225 p refs (Contract F33615-71-C-1173; AF Proj. 437A)

(AD-770299; ASD-TR-73-31) Avail: NTIS CSCL 15/5

A lightweight, one hundred percent recoverable airtransportable maintenance hangar to accommodate all current Air Force fighter aircraft (F-15, F-111, F-106, A-9, A-10, F-4). The design is specifically for use as part of the inventory of mobility equipment. Major design features are the employment of no-thru metal panels, containerization of the entire structure for transport, and the use of folding shell endwalls which provide maximum entry and egress clearances. (Modified author abetract)

N74-17278# Reynolds Metals Co., Richmond, Va. Metallurgical Research Div

PROGRAM TO IMPROVE THE FRACTURE TOUGHNESS AND FATIGUE RESISTANCE OF ALUMINUM SHEET AND PLATE FOR AIRCRAFT APPLICATIONS

David S. Thompson, Sander A. Levy, Grant E. Spangler, and David K. Benson, Sep. 1973, 116 p. refs Prepared in cooperation with Midwest Research Inst., Kansas City, Mo. (Contract F33615-72-C-1202; AF Proj. 7351)

(AD-770350: AFML-TR-73-247-Vol-1) Avail: NTIS CSCI

11/6

A variety of thermomechanical processing practices have been investigated in 2000 and 7000 series alloys. These have been of the form: solution heat treat, quench, preage, work harden and final age. In Task I the effects of Cu (1.9 and 1.3%) and Mg (2.5 and 1.7%) content of 7000 series alloys were evaluated together with the preage and thermomechanical working conditions. It was found that the highest properties were obtained with the lower Cu and Mg contents, with an overaged preage followed by a warm rolling operation. These findings were incorporated in Task II in the choice of alloy (BX725: 6% Zn. 2.4% Mg, 1.5% Cu, and .12% Zr) and by concentrating an overaged. warm rolled processing conditions. It was found that the goals of the contract would be achieved; however, some unexplained low toughness values were obtained. (Modified author abstract)

N74-17374# Air Force Weapons Lab., Kirtland AFB, N.Mex. UNITED STATES AIR FORCE AIRCRAFT POLLUTION EMISSIONS Final Report, 1 Jan. - 13 Jul. 1973 Dennis F. Naugle and Bernard T. Delaney Nov. 1973 51 p

refe (AD-769482; AFWL-TR-73-199) Avail: NTIS CSCL 13/2

The interest in pollution emissions from aircraft has been enhanced by Environmental Protection Agency's recent determination that major civilian airports are significant contributors to localized air-quality degradation. This report summarizes the USAF aircraft and engines in common use, presents normalized engine pollution emission factors (emission indices), reviews deficiencies in present emission data, and recommends future efforts to better analyze aircraft emissions. Primary goals of impact assessments at many locations and to stimulate comment on the direction of future USAF efforts concerning the recommended Author (GRA) projects.

N74-17376# Office of Naval Research, London (England). ATMOSPHERIC POLLUTION BY AIRCRAFT ENGINES A. M. Mellor (Purdue Univ.) and Ralph Roberts 1 Aug. 1973 23 p

(AD-769655; ONRL-C-17-73) Avail: NTIS CSCL 13/2

The report summarizes papers delivered at a meeting on the effect of chemical air pollution by aircraft at very high altitudes and near airports. Also discussed are engineering techniques for reducing pollutant production in combustion in aircraft engines. Both the problems of pollution generation as well as diffusion were discussed. (Modified author abstract) GRA

N74-17519# RAND Corp., Santa Monica, Calif. TECHNOLOGICAL CHANGE THROUGH PRODUCT IM-PROVEMENT IN AIRCRAFT TURBINE ENGINES Robert Shishko May 1973 88 p refs (Contract F44620-73-C-0011; Proj. RAND) (AD-769911; R-1061-PR) Avail: NTIS CSCL 21/5

An area of R and D activity often as important as new product, R and D is R and D directed at improving an existing object, often called product improvement. Multiple regression techniques were used to estimate a multi-dimensional technology tradeoff surface for U.S. aircraft turbine engines. improvement engines embody a higher level of technology than their original versions, but the rate of technological advance is significantly less than the long-run average for new designs. Further, thrust-growth product improvement is subject to diminishing returns with respect to dollar resources. (Modified GRA author abstract)

N74-17626# RAND Corp., Santa Monica, Calif. HIGH-PERFORMANCE COMPOSITE MATERIALS FOR VEHICLE CONSTRUCTION: AN ELASTOPLASTIC ANALY-SIS OF CRACK PROPAGATION IN A UNIDIRECTIONAL COMPOSITE

Donald F. Adams Mar. 1973 105 p refs (Contract F44620-73-C-0011; Proj. RAND) (AD-769867; R-1070-PR) Avail: NTIS CSCL 11/4

A method was developed for predicting the strength of a unidirectional composite material in terms of its micromechanical response to an applied stress. It includes elastoplastic material behavior, local failure that initiates a crack, and propagation of the crack to cause total failure of the composite.

Ohio State Univ. Research Foundation, Co-N74-17648# lumbus

SUPERSONIC COMBUSTION AND BURNING IN RAMJET COMBUSTORS Final Report, 1 Apr. 1972 - 31 Mar. 1973 Rudolph Edse, E. E. Rice, and C. T. Kitzmiller Jul. 1973 199 p

(Grant AF-AFOSR-1902-70; AF Proj. 9711) (AD-770061; AFOSR-73-2025TR; SR-3) Avail: NTIS CSCL 21/2

The report contains research results obtained from experimental and theoretical studies of subsonic and supersonic burning in ramiet combustors during the period 1 April 1972 to 31 March 1973. Hydrogen-oxygen mixtures sensitized by chlorine have been ignited photochemically at flow speeds from 350-550 m/s and photochemical ignition limits have been measured at pressures between 100 and 400 mmHg. The formation of weak detonation has been observed. Calculated ignition delay times have been found to agree satisfactorily with experimental values. Tables and graphs have been prepared for quick predictions of the changes resulting from heat addition to an existing sub- or supersonic flow, such as those in ramjet combustors. (Modified author abstract)

N74-17689# Air Force Inst. of Tech., Wright-Patterson AFB, Ohio. School of Engineering.

TOWARD THE DEFINITION OF ESCAPE AND CAPTURE REGIONS FOR A TWO AIRCRAFT PURSUIT-EVASION GAME M.S. Thesis

P. H. Cawdery Jun. 1973- 78 p. refs

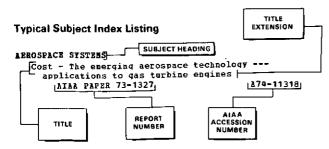
(AD-770281; GA/MC/73-4) Avail: NTIS CSCL 15/7

The motivation for the thesis originates in research currently being conducted at the USAF Armament Laboratory, Eglin AFB, Florida. These studies concern the performance of an F4-E aircraft in air-to-air combat; the weapon system considered is an infra-red, heat-seeking missile. The studies fall into two categories: (a) Definition of those regions in the vicinity of a target aircraft which the attacker must penetrate in order to attain a probability of killing his opponent greater than zero; definition of optimal strategies for the attacker to intercept and penetrate the high probability of kill P sub K regions. In all cases, the target aircraft is considered as passive and unaware of attack. This paper makes the logical extension to the above research, and attempts to develop a method by which the capability of the attacker may be defined against an intelligent and evasive target. (Modified author abstract)

SUBJECT INDEX

AERONAUTICAL ENGINEERING / A Special Bibliography (Suppl. 44)

MAY 1974



The title is used to provide a description of the subject matter. When the title is insufficiently descriptive of the document content, a title extension is added, separated from the title by three hyphens. The NASA or AlAA accession number is included in each entry to assist the user in locating the abstract in the abstract section of this supplement. If applicable, a report number is also included as an aid in identifying the document.

Δ

^	
1-10 AIRCHAFT	
The Fairchild Industries A-10 - Designed for	r close
air support	<u> 7</u> 4-21726
ACOUSTIC ATTENUATION	
Noise suppressing devices Russian book	∆74 -20904
ACOUSTIC MEASURBREETS	
Effect of configuration variation on externation of configuration variation on externation of the state of th	
earaa nanno 74-1901	A74-20775
a mean to determine the annlicability of I	noise
abatement approach procedures to McDonne.	11
Douglas Aircraft	
cmaca_cp_1186777	K74-15714
walco measurements obtained during enginee:	ring
evaluation of two-segment approaches in	a
727-200 aircraft	
[NASA-CR-114691]	N74-15716
ACCRESTA DECEMBERTES	
Noise characteristics of a turbulent cross	wind 1et A74-20281
Acoustic characteristics of a large-scale	wind
tunnel model of an upper-surface blown f	lap
transport having two engines	
[NASA-TM-X-62319]	N74-15719
A DO DOMEST C. DO A STORE TO THE	
Acoustic scattering from an aircraft trail	ing vortex
	¥74-16377
ACOUSTIC VELOCITY	co
Tables for flight tests qiving referen atmospheres, calibration velocity, mach	number.
atmospheres, Calibration Velocity, Mach	Edupor,
and sound velocity	N74-15722
ACTUATORS	
Practical experience with a digital	
olectrohydraulic actuator	ACTAE
	N74-15735
The dynamic behavior of a digital electron	iydraulic
actuator	
[NASA-TI-F-15295]	N74-15736
- c an Decision and Control. 4th di	10
Diego, Calif., December 5-7, 1973, Proce	A74-20076
Adaptive systems research in the NASA	
	A74-20095
Digital adaptive flight controller develop	pment
hiditat agaherie riidan gangaran	A74-20120

```
Reliability of adaptive systems --- Russian book on flight control
   Digital adaptive model following control --- for lateral aircraft dynamics
ADRESIVE BONDING
   Technology of production of sandwich panels with aluminum homeycomb cores
   Effect of adhesive on the impact resistance of
     laminated plastics for windshield applications
                                                      W74-16259
      [AD-769735]
AERODINATIC CHARACTERISTICS
   Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic
   Subsonic potential aerodynamics for complex
      configurations - A general theory
                                                      A74-20280
   Aerodynamic problems of turbojet propulsion
      systems, repercussions on gas turbine development
   The influence of non-linear longitudinal
      aerodynamic characteristics on the power
      spectral response of aircraft to atmospheric
      turbulence
    Analysis of the flow about delta wings with
      leading edge separation at supersonic speeds
                                                       N74-15704
      [NASA-CR-132358]
       experimental investigation of a high lift
      device on the owl wing
      [AD-769492]
    Numerical calculations of velocity and pressure
      distribution around oscillating airfoils
      [ NASA-CE-2368]
    Collection of experimental data for aircraft afterbody drag in the transonic and supersonic range and comparison with theoretical
    calculation methods
[BBYG-FBWT-73-27]
Calculation of the longitudinal aerodynamic
                                                       874-16705
      characteristics of STOL aircraft with
       externally-blown jet-augmented flaps
                                                       N74-16719
       r nasa-cr-23581
 AERODINAMIC CONFIGURATIONS
    An approximate method for the calculation of the
       pressure distribution on a wing-come configuration
                                                       A74-20046
    Effect of configuration variation on externally
       blown flap noise
    [All PAPER 74-190]
An experimental investigation of a high lift
                                                        A74-20775
       device on the owl wing
                                                        974-15707
       [AD-769492]
     Design of a powered elevator control system
       powered elevator system for modified C-8A
       aircraft for STOL operation [NASA-CR-114727]
                                                        N74-15712
     A study to determine the feasibility of a low
       sonic boom supersonic transport [NASA-CR-2332]
                                                        N74-15713
     C-5A/orbiter wind tunnel testing and analysis:
       Piggyback ferry [NASA-CR-133484]
                                                        N74-15717
     Acoustic characteristics of a large-scale wind
       tunnel model of an upper-surface blown flap
       transport having two engines [NASA-TH-X-62319]
                                                        ¥74-15719
```

SUBJECT INDEX

The results of a high-speed wind tunnel to investigate the effects of the WASA ref			
		Analysis of aided inertial navigation syst	tens
		performance on international routes	
engine nacelles on the stability and co			A74-20096
characteristics of the Boeing 727 airpl		Simplified navigation for unmanned aircras	Et
[NASA-CB-134545]	N74-16726		A74-20098
AERODYNAMIC FORCES		AIR POLLUTION	_
Aerodynamic analysis of various flight co	aditions	United States Air Force aircraft pollution	a emissions
of conventional aircraft. IX - Aerodyna	#1C	[AD-769482]	カブター 1フョール
foundations /General Survey/		Atmospheric pollution by aircraft engines	
Mongardant of passages as an english.	A74-22273	[AD-769655]	N74-17376
Measurement of pressure on an oscillating	alleron	AIR TO AIR MISSILES	
in transonic flow under plane-paral: conditions	iel flow	Toward the definition of escape and captur	re
[AD-769982]	W74 44700	regions for a two aircraft pursuit-evasi	OR GARA
ABRODYNAMIC INTERFERENCE	N74-16739	considering air to air infrared miss	sile
Trailing vortex effects on following aircr	- F1	weapons	
registra sources effects on tollowing gird		[AD-770281]	874-17689
Vortexes in aircraft wakes light aircr	A74-19778	AIR TRAPPIC	
bazards	art	Urban air traffic and city planning: Case	study of
buzutus	A74-22206	Los Angeles County Book	
AERODYNAMIC LOADS	A74-22200	177 711000 11000	A74-20624
Studies of an elastic wing aerodynamic	- 1023	AIR TRAPPIC CONTROL	
tests	, Ioau	Recent advances in air traffic control rad	ars
	A74-21781	W-111 *. 1 11 1	∆74-1 9315
Dynamic stability of sweptback aircraft wi	1000	Problems in civil air traffic control which	.h 510
under the action of variable aerodynamic	forces	technology may impact Surface Acoust	ic Wave
	A74-22225	devices	
Helicopter blade-tip stability in forward	flight	The reduction of gentains in the second	A74-19390
LatedId	N74-16711	The reduction of garbling in secondary surveillance radar	
ARRODYNAMIC MOISE	-17 IV/II	sarastrunce taugi	
Analysis of axisymmetric turbulence releva	int to	Bigh integrity and dear 14-6-	A74-19391
jet noise		High integrity ATC data links	
•	A74-19631	The fuel crisis and the controller tur	A74-19392
A prediction model for wake related sound		aircraft descent trajectories for fuel	poler
generation by single airfoils and subson	ic rotors	consumption reduction	
	N74-15700	CONSCRIPCTOR LAGRESTOR	
A study to determine the feasibility of a	low	A look at the British ATC scene. II pr	A74-19726
sonic boom supersonic transport		and secondary radar crotage decades	1 mary
[NASA-CR-2332]	N74-15713	and secondary radar systems development	
APRODINABLE STALLING		Some transmission characteristics of AEROS	A74-19727
A nonlinear relay model for post stall osc	illations	air traffic control systems	AT-type
[AD-769405]	N74-15706	are craffic control systems	.7
ABRODAUTICAL BUGINEERING	· · · · · ·	Air traffic control scheme through simulat	A74-19957
Role of computerized simulation in the per	fecting	mas statile control scheme thioligh simulat	
aeronautical equipments or systems a	nollei	The automatic aircraft guidance law for mi	A74-20663
to hydraulic pump and air intake design	` '	collision avoidance	a-air
	N74-16811	**************************************	A74-21340
ABRONAUTICAL SATELLITES		The effects of interference on monopulse p	A/4-21340
Some transmission characteristics of AEBOS	AT-type	characteristics of air traffic contr	strormance
air traffic control systems		heacons	or radar
17707714	∆74÷19957	[AD-769336]	N74-15876
AEROSPACE ENGINEERING		AIR TRANSPORTATION	
Advanced composites in aerospace struc	tural	Energy problems in air transportation	ontions
design		for demand reduction, efficiency increase	2667000
		fuel alternatives	o and
[AIAA PAPER 74-242]	A74-20834		e and
APTRREODIES			
AFFEREODIES Collection of experimental data for aircra	f+		e and 174-19479
AFTERBODIES Collection of experimental data for aircra afterbody drag in the transonic and supe	f+	Airports evolution and qualification	A74-19479
AFFEREODIES Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical	f+	Airports evolution and qualification The implications for air transportation of	A74-19479
AFFEREODIES Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical calculation methods	ft rsonic		A74-19479
AFFEREODIES Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical	f+	Airports evolution and qualification The implications for air transportation of shortage	A74-19479 A74-19481 energy
AFFEREODIES Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROBS Measurement of pressure on an oscillating	ft rsonic N74-16705	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the	A74-19479 A74-19481 energy
AFFEREODIES Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROBS Measurement of pressure on an oscillating	ft rsonic N74-16705	Airports evolution and qualification The implications for air transportation of	A74-19479 A74-19481 energy
AFFREDORIS Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBYG-FEWT-73-27] AILEBORS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions	ft rsonic N74-16705	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system	A74-19479 A74-19481 energy
AFFREDORIS Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBYG-FEWT-73-27] AILEBORS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions	ft rsonic N74-16705 aileron el flow	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a	A74-19479 A74-19481 energy A74-19486 context
AFTEREODIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILEROPS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions [AD-769882] AIE FLOW	ft rsonic N74-16705 aileron el flow N74-16739	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system	A74-19479 A74-19481 energy A74-19486 context A74-19487
AFTEREODIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILEROPS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions [AD-769882] AIE FLOW	ft rsonic N74-16705 aileron el flow N74-16739	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205]	A74-19479 A74-19481 energy A74-19486 context
AFFREDDIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BMVG-FEWT-73-27] AILEROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air	ft rsonic N74-16705 aileron el flow N74-16739	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT	A74-19479 A74-19481 energy A74-19486 context A74-19487
AFTERBODIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBEOUS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aircushion landing system	ft rsonic N74-16705 aileron el flow N74-16739	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORDE EQUIPMENT Engineering aspects with satellite communic	A74-19479 A74-19481 energy A74-19486 context A74-19487
AFFREEDIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBYG-FEWT-73-27] AILBEOUS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aircushion landing system [AD-770080]	ft rsonic N74-16705 aileron el flow N74-16739 tip fan	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation
AFTEREODIES Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical calculation methods [BMVG-FRWT-73-27] ALLEBOWS Measurement of pressure on an oscillating in transonic flow under plane-parally conditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-extern	ft rsonic N74-16705 aileron el flow N74-16739 tip fan	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72]	A74-19479 A74-19481 energy A74-19486 context A74-19487
AFFREEDIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing	ft rsonic N74-16705 aileron el flow N74-16739 tip fan	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aim cushion landing system [AD-770080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study	ft rsonic N74-16705 aileron el flow N74-16739 tip fan	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBYG-FBWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-parally conditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-77080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448]	ft rsonic N74-16705 aileron el flow N74-16739 tip fan	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS	A74-19479 A74-19481 energy A74-19486 context A74-19487 H74-16694 cation N74-15842
AFTEREODIES Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FBWT-73-27] AILEBOUS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aircushion landing system [AD-770080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 aally ing	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-77080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR STAKES A new pneumatic hybrid control system for the system reserved.	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 aally ing	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-JA avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-77080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR STAKES A new pneumatic hybrid control system for the system reserved.	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 aally ing	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-76205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-JA avionics - Transmitting data multiprocessor computer Beliability of aircraft navigation computer Bussian book	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation N74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FBWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aircushion landing system [AD-770080] STOI tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES A new pneumatic hybrid control system freduction of supply air consumption	ft rsonic N74-16705 aileron el flow N74-16739 tip fan r N74-16744 ailly ing N74-16753	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [Ap-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [ARPT-7-2] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aim cushion landing system [AD-77080] STOL tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR ISTAKES A new pneumatic hybrid control system freduction of supply air consumption Role of computerized simulation in the ports	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 pally lng N74-16753	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-76205] AIRBOHNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation N74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FRWT-73-27] AILEBOWS Measurement of pressure on an oscillating in transonic flow under plane-parally conditions [Ab-76982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [Ab-770080] STOL tactical aircraft investigation-externable of the system trade study [Ab-770448] AIR ISTAKES A new pneumatic hybrid control system freduction of supply air consumption Role of computerized simulation in the peransormatical equipments or systems	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 pally lng N74-16753	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-tham-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format.	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation N74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FBWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aircushion landing system [AD-770080] STOI tactical aircraft investigation-external blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES A new pneumatic hybrid control system freduction of supply air consumption	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 pally lng N74-16753	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation N74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and supe range and comparison with theoretical calculation methods [BBVG-FBWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralle conditions [AD-76982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to aim cushion landing system [AD-77080] STOI tactical aircraft investigation-extension flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR ISTAKES A new pneumatic hybrid control system freduction of supply air consumption Role of computerized simulation in the perf aeronautical equipments or systems age to hydraulic pump and air intake design	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 pally lng N74-16753	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBOHNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents [NTSB-BA-73-101]	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation N74-15842 by A74-19754
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FRWT-73-27] AILEBOWS Measurement of pressure on an oscillating in transonic flow under plane-parally conditions [AD-76982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-externablown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR ISTAKES A new pneumatic hybrid control system freduction of supply air consumption Role of computerized simulation in the perface of aeronautical equipments or systems are to hydraulic pump and air intake design	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 pally ing N74-16753 For A74-19884 Fecting splied N74-16811	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-tham-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents [NTSB-BA-73-10] AIRCRAFT ANTERNAS	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754 cs A74-20905
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-externation flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES A new pneumatic hybrid control system in reduction of supply air consumption Role of computerized simulation in the perf aeronautical equipments or systems are to hydraulic pump and air intake design AIR NAVIGATION Collection of problems on airplane riloting	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 ailly ing N74-16753 for A74-19884 fecting oplied	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents [MISB-DA-73-10] AIRCRAFT ANTENDAS Roll-plane analysis of on-aircraft antennas	A74-19479 A74-19481 energy A74-19486 context A74-19487 N74-16694 cation N74-15842 by A74-19754 cs A74-20905
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-externation flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES A new pneumatic hybrid control system in reduction of supply air consumption Role of computerized simulation in the perf aeronautical equipments or systems are to hydraulic pump and air intake design AIR NAVIGATION Collection of problems on airplane piloting revised and enlarged edition/ Russian	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 ailly ing N74-16753 for A74-19884 fecting oplied N74-16811	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-76205] AIRBOHNE EQUIPMENT Engineering aspects with satellite communic tenninals in aircraft [REPT-7-72] AIRBOHNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents [NTSB-BA-73-10] AIRCRAFT ANTERBAS Roll-plane analysis of on-aircraft antennas	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754 cs A74-20905
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-externation flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES A new pneumatic hybrid control system in reduction of supply air consumption Role of computerized simulation in the perf aeronautical equipments or systems are to hydraulic pump and air intake design AIR NAVIGATION Collection of problems on airplane piloting revised and enlarged edition/ Russian	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 ailly ing N74-16753 for A74-19884 fecting oplied	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-tham-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents [NTSB-BA-73-10] AIRCRAFT ANTENNAS Roll-plane analysis of on-aircraft antennas Electromagnetic effects of aircraft vake-accidents	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754 cs A74-20905
Collection of experimental data for aircra afterbody drag in the transonic and superange and comparison with theoretical calculation methods [BBVG-FEWT-73-27] AILBROWS Measurement of pressure on an oscillating in transonic flow under plane-paralleconditions [AD-769982] AIR FLOW Study of reverse-flow characteristics of a and an ejector for application to air cushion landing system [AD-770080] STOL tactical aircraft investigation-externation flap. Volume 6: Air cushion landing system trade study [AD-770448] AIR INTAKES A new pneumatic hybrid control system in reduction of supply air consumption Role of computerized simulation in the perf aeronautical equipments or systems are to hydraulic pump and air intake design AIR NAVIGATION Collection of problems on airplane piloting revised and enlarged edition/ Russian	ft rsonic N74-16705 aileron el flow N74-16739 tip fan c N74-16744 ailly ing N74-16753 for A74-19884 fecting oplied N74-16811	Airports evolution and qualification The implications for air transportation of shortage Puture advanced-technology aircraft in the of an integrated transport system A comparative economic analysis of a lighter-than-air logistics system [AD-769205] AIRBORNE EQUIPMENT Engineering aspects with satellite communic terminals in aircraft [REPT-7-72] AIRBORNE/SPACEBORNE COMPUTERS Lockheed S-3A avionics - Transmitting data multiprocessor computer Reliability of aircraft navigation computer Russian book AIRCRAFT ACCIDENTS Aircraft accident reports: Brief format, supplemental issue, 1972 accidents [MISS-DA-73-10] AIRCRAFT ANTENDAS Roll-plane analysis of on-aircraft antennas Electromagnetic effects of aircraft wake-accident interaction	A74-19479 A74-19481 energy A74-19486 context A74-19487 W74-16694 cation W74-15842 by A74-19754 cs A74-20905

AIRCRAPT GUIDANCE SUBJECT INDEX

Correlational ground speed meters and drift	The Fairchild Industries A-10 - Designed for close air support
indicators of flight vehicles Bussian book A74-20900	A74-21726
Engineering aspects with satellite communication	Flight test of the ski equipped Mohawk A74~21820
terminals in aircraft	An optimal control approach to airplane stability
[REPT-7-72] N74-15842 Roll plane analysis of on-aircraft antennas	augmentation systems design
[NASA-CB-136815] N74-16953	N74-16712
Antenna modeling of the RC-135	Study of quiet turbofan STOL aircraft for short-haul transportation. Volume 1: Summary
[AD-769913] N74-16960 IRCRAPT CARRIERS	r NASA-CR-23531 N74-16/18
Vectored thrust V/STOL shipboard testing	Advanced subsonic long-haul transport terminal
A74-19498	area compatibility study. Volume 1:
Conceptual options for future aircraft-ship	Compatibility assessment [NASA-CR-132367] N74-16729
operations [AIAA PAPER 74-300] A74-21290	Advanced subsonic long-haul transport terminal
Wind modification over the flight decks of	area compatibility study. Volume 2: Research
high-speed ships [ATAA PAPER 74-301] A74-21291	and technology recommendations [NASA-CB-132368] N74-16730
[AIAA PAPER 74-301] A74-21291 A new aircraft/ship mating system	STOL tactical aircraft investigation, externally
[AIAA PAPER 74-303] A74-21292	blown flap. Volume 2: Design compendium
The design application of aircraft securing and	(AD-770110) N74-16751 STOL tactical aircraft investigation-externally
traversing systems to the surface effect ship	blown flap. Volume 5: Plight control
[AIAA PAPER 74-304] Investigation of the fatigue behavior of large	technology. Part 2: Simulation studies/flight
propellers for aircraft carriers	control system validation FID=7700091 F74-16752
[AD-769466] N74-16603	[AD-770449] B/4-10/52 AIRCRAFT BNGINES
IRCRAFT COMMUNICATION Lockheed S-3A avionics - Tactical voice and data	The case for engine flying test beds for
communication	· aircraft
A74-19753	A74-19499 Long range view of materials research for civil
IRCHAFT COMPARTMENTS	transport aircraft
Conference on Transparent Mircraft Enclosures development and design concepts for vision areas	A74-20210
of crew enclosules	Engine condition monitoring - The Alitalia approach A74-20825
[AD-769344] N74-15727	The environment and the gas turbine
IRCRAFT COMPIGURATIONS An investigation of cost factors relating to class	A74-21874
4 aircraft modifications	On the effect of quieter aircraft engines on noise
[AD-769195] N74-15730	and number index /NNI/ values A74-22244
IRCRAFT CONTROL	United States Air Force aircraft pollution emissions
Collection of problems on airplane piloting /4th revised and enlarged edition/ Russian book	FAD-7694821 N74-1/3/4
A74-19372	Atmospheric pollution by aircraft engines
Flight vehicle control systems Bussian book A74-19374	[AD-769655] 874-17376 Technological change through product improvement
F-15 progress report. II with emphasis on	in aircraft turbine engines
flight test status and control characteristics	[AD-769911] N74-17519
A74-19489	ATECRAPT EQUIPMENT Preliminary tests of vulnerability of typical
Adaptive systems research in the NASA A74-20095	aircraft electronics to lightning-induced voltages
Digital adaptive flight controller development	[NASA-CR-2350] N74-15720
A74-20120	An investigation of cost factors relating to class 4 aircraft modifications
Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum	[AD-769195] N74-15730
control speed	A test technique for measuring lightning-induced
A74-20274	voltages on aircraft electrical circuits
A direct procedure for partitioning scanning	[NASA-CR-2348] Effect of modified seat angle on air to air weapon
workload with a flight director	system performance under high acceleration
Digital adaptive model following control for	[AD-770271] N74-16747
lateral aircraft dynamics	AIRCRAPT FUEL SYSTRMS An experimental study of attenuation of shock
Analysis of control surface augmentation in	waves in mircraft fuel tanks
high-performance aircraft by thrust vectoring	[AD-769930] N74-16750
[AD-769495] B/4-13/20	AIRCRAFT FURIS Hydrogen - Make-sense fuel for an American
Determination of critical nondimensional parameters in aircraft dynamic response to	supersonic transport
random input	[AIAA PAPER 74-163] A74-19353
CNACA_CD_23611 N74-16322	Energy problems in air transportation options for demand reduction, efficiency increase and
An optimal control approach to airplane stability auguentation systems design	fuel alternatives
auguentation systems design 874-16712	A74-19479
AIRCRAFT DESIGN	The implications for air transportation of energy
Future advanced-technology aircraft in the context	shortage
of an integrated transport system	Requirements on the purity of aircraft fuels
The development and evaluation of	174-20524
unight-actination formulas for aircraft design	AIRCRAFT GUIDANCE The national Microwave Landing System
with the aid of methods of mathematical statistics and probability calculus German	A74-19317
hook	Parameters of RF flight navigation aids and their
A74-20049	measurement Russian book 174-19371
Plan for developing structural criteria for composite airframes	Lockheed S-3A avionics - Three system digital
A/4-20945	flight quidance
General Dynamics lightweight fighter F-16	A74-19751
aircraft development and production	

A74-21320

AIRCRAFT HAZARDS SUBJECT INDEX

The automatic aircraft quidance law for mid collision avoidance	-air	The impact of conversion to the metric measu	
	- 041	system on aircraft maintenance at base lev	rement
	A74-21340		174-15733
AIRCRAFT HAZABOS		An analysis of the phased inspection system	for
Razard function monitoring of airline compo-	nents	B-52H aircraft analysis of cost reduct	ion he
	A74-20967	increasing flying hours between inspection	ıs
Vortexes in aircraft wakes light aircra	ft	[AD-769154]	174-16695
hazards		Maintainability analysis of major helicopter	
	A74-22206	components analysis of man-hour costs	for
AIBCRAFT HYDBAULIC SYSTEMS		maintaining military helicopters	
Trends in hydraulic systems of commercial		[AD-769941]	74-16740
transport aircraft		Research and design of a seventy-six (76) for	oot
	<u> 274~19471</u>	span aircraft maintenance hanger with quar	
AIRCBAFT INDUSTRY		shell endwalls	
The implications for air transportation of	energy	[AD-770299]	74-17001
shortage		AIRCRAFT MOISE	
	&74-19486	Noise problems in airport design and in civi	1
Aircraft life cycle profitability - The		aircraft operation	
manufacturer's challenge		1	74-19476
fAIAA PAPER 74-280]	A7 4-20836	Statistical analysis of aircraft noise level	s
AIRCBAFT INSTRUMENTS		Z.	74~19638
Correlational ground speed meters and drift		Noise characteristics of a turbulent crosswi	ind jet
indicators of flight vehicles Russian		2	74-20281
	A74-20900	Reduction of noise from small turbopropulsion	п
Reliability of aircraft navigation computer:	s	engines	
Bussian book		[AIAA PAPER 74-59]	74-20760
178CB1DE (SEDING	A74-20905	Noise suppressing devices Russian book	
Albert Landing			74-20904
The national Microwave Landing System		On the effect of quieter aircraft engines on	noise
	A74~19317	and number index /NNI/ values	
Zeppelins - Not again airship operation: bazards	al		74-22244
	.70 00447	A study to determine the applicability of no	ise
	A74-20167	abatement approach procedures to McDonnell	
VITAL II Virtual Image Takeoff and Land:	lnq	Douglas Aircraft	
system in Boeing 727 flight simulator	.74 00000	[NASA-CR-114677]	174+15714
	A74-20275	Noise measurements obtained during engineeri	.ng
Safety during automatic landing with poor vi		evaluation of two-segment approaches in a	
Plicht toot safety analysis of the all and	A74-20422	727-200 aircraft	
Flight test safety analysis of the all weat landing system /AWLS/ program	per	[NASA-CR-114691]	74~15716
	170 20074	Reduction of aircraft noise in the vicinity	of
A new aircraft/ship mating system	A74-20974	airports	
		[NASA-TT-F-15237]	74-15718
Calculation and observance of landing parame	∆74 -21292	Flight evaluation of two segment approaches	for
for the aircraft IL-62 and their effect or	eters	jet transport noise abatement	
safety factor	u tue		74-16995
	A74-22270	AIRCRAFT PARTS	
Pixed-base simulation study of decoupled con	ntrols	Changes in flutter results by stiffening som	Ð
during approach and landing of a STOL train	Depart	degrees of freedom flutter analysis of	
airplane	n p for f	elastically connected aircraft structures	with
	N74-15703	low masses [TR-195] a	
Design of a flight director/configuration	W74 13703	AIRCRAPT PERFORMANCE	74-15709
MOMONEUL SYSTEM FOR DIJOTER STOLL APPROAC	chae		_
Danagement system for piloted STOL approac		F-15 progress report. II with emphasis o	
[NASA-CR-114688]	N74-15715	flight test status and control characteris	tics
[NASA-CR-114688] Noise measurements obtained during engineer:	N74-15715 ina	flight test status and control characteris	tics 74-19489
[NASA-CR-114688]	N74-15715 ina	flight test status and control characteris A Longitudinal stability for supersonic trans	tics 74-19489
{NASA-CR-114688} Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft	N74-15715 ing	flight test status and control characteris A Longitudinal stability for supersonic transp aircraft	tics 74-19489 ort
{NASA-CR-114688} Boise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system	N74-15715 ina	flight test status and control characteris A Longitudinal stability for supersonic transp aircraft	tics 74-19489 ort 74-19490
{NASA-CR-114688} Boise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system	N74-15715 ing	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation	tics 74-19489 ort 74-19490
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CB-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494]	N74-15715 ing N74-15716	flight test status and control characteris Longitudinal stability for supersonic transpaircraft A S-3A initial operational test and evaluation A	tics 74-19489 ort 74-19490
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to	N74-15715 ing N74-15716	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing	tics 74-19489 ort 74-19490 74-19496
<pre>{NASA-CR-114688] Soise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft (NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to</pre>	N74-15715 ing N74-15716 N74-15729 akeoff	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing	tics 74-19489 ort 74-19490
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-	N74-15715 ing N74-15716 N74-15729 akeoff	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report	tics 74-19489 ort 74-19490 74-19496 74-19498
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CB-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-1 concept aircraft	N74-15715 ing N74-15716 N74-15729 akeoff	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report	tics 74-19489 ort 74-19490 74-19496
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-1 concept aircraft [NASA-TR-X-62333]	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight	tics 74-19489 ort 74-19490 74-19496 74-19498
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-] concept aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum	tics 74-19489 ort 74-19490 74-19496 74-19498
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CB-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS)	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered- concept aircraft [NASA-TR-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026]	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an	flight test status and control characteristal Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral let configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TH-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a tenth-scale and a second context of the second con	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an	flight test status and control characteris Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-deconcept aircraft [NASA-TM-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of at and an ejector for application to air	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500
[NASA-TB-X-62333] Boise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CB-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model hir Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a tand an ejector for application to air cushion landing system	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 tip fan	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of at and an ejector for application to air cushion landing system [AD-770080]	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CB-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of at and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 tip fan	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [AINA PAPER 74-301]	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft the and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TM-X-62333] Drop and static tests on a tenth-scale model hir Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a the and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement	N74-15715 N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 tip fan	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for flucchanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TH-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a t and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300]	874-15715 ing 874-15716 874-15729 akeoff Lift 874-16720 L of an 874-16742 tip fan	flight test status and control characterism. Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TM-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a tand an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-everters	N74-15715 N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 tip fan	Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluenchanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-jource aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model hir Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a to and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externablown flap. Volume 6: Air cushion landing	N74-15715 N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 tip fan	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight (WEZ-TM-901(WEZ-D))	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15702
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-journey aircraft [NASA-TH-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a tand an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externation trades thow flap. Volume 6: Air cushion landing system trade study	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 Lip fan 174-16744	flight test status and control characterism. Longitudinal stability for supersonic transpaircraft S-3à initial operational test and evaluation vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluchanics Wind modification over the flight decks of high-speed ships [AIAN PAPER 70-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [MRR-TM-901(MR/D)] A nonlinear relay model for post stall oscil	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15702 lations
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered- concept aircraft [NASA-TM-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a t and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externa blown flap. Volume 6: Air cushion landin system trade study [AD-770481]	N74-15715 N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 tip fan	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [AINA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WRE-TM-901(WE/D)] A nonlinear relay model for post stall oscil [AD-769405]	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15702 lations 74-15706
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-j concept aircraft [NASA-TH-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a tand an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externation flap. Volume 6: Air cushion landing system trade study [AD-770448] AIRCRAFT BAINTENANCE	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 Lip fan N74-16744 N74-16749	flight test status and control characterisms. Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluctuations Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WRD-TM-901(WE/D)] A nonlinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15702 lations 74-15706
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TH-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a t and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externation landing system flap. Volume 6: Air cushion landing system trade study [AD-770448] AIRCRAFT MAINTENANCE Equipment for aircraft and helicopter technical contents of the strength of the study and the study are study as a study are study and study are study as a study and study are study are study and study are study are study as a study are	N74-15715 ing N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 Lip fan N74-16744 N74-16749	flight test status and control characterisms. Longitudinal stability for supersonic transpaircraft S-3à initial operational test and evaluation. Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for flucthanics Wind modification over the flight decks of, high-speed ships (AIAN PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WRE-TM-901 (WE/D)] A nonlinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system powered elevator system for nodified c-8A	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15702 lations 74-15706
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-concept aircraft [NASA-TH-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of at and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externation of lap. Yolume 6: Air cushion landing system [AD-770448] AIRCRAFT MAINTEMBARCE Equipment for aircraft and helicopter technic servicing Bussian book	874-15715 ing 874-15716 874-15729 akeoff Lift 874-16720 L of an 874-16742 tip fan 874-16744 874-16749 illy ing 874-16753	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WRE-TM-901(WR/D)] A nonlinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system powered elevator system for modified c-8A aircraft for STOL operation	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15702 lations 74-15706
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-sequent approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered-jumper aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model hir Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a to and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externation flap. Volume 6: Air cushion landing system trade study [AD-770481] AIRCRAFT HAINTENBARCE Equipment for aircraft and helicopter technics servicing Russian book	N74-15715 N74-15716 N74-15729 akeoff Lift N74-16720 L of an N74-16742 Lip fan 174-16744 174-16749 111y 119	flight test status and control characterist Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for flucthanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [MRE-TM-901(WE/D)] A nonlinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system powered elevator system for modified C-8A aircraft for STOL operation [NASA-CR-114727]	tics 74-19489 ort 74-19490 74-19496 74-19498 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15706 74-15712
[NASA-CR-114688] Noise measurements obtained during engineers evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft to and landing performance applied to conventional, vectored lift, and powered concept aircraft [NASA-TB-X-62333] Drop and static tests on a tenth-scale model hir Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a to and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externate blown flap. Volume 6: Air cushion landing system trade study [AD-7704481] AIRCRAPT HAINTENANCE Equipment for aircraft and helicopter technic servicing Russian book Engine condition monitoring - The Alitalia a	N74-15715 N74-15716 N74-15729 Akeoff Lift N74-16720 L of an N74-16742 Lip fan H74-16749 H11y H19 H174-16753 Lcal LOGAL	Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WRE-TH-901(WR/D)] Nanolinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system powered elevator system for modified C-8A aircraft for STOL operation [MSAS-CR-114727] A simplified flight-test method for determin	tics 74-19489 74-19490 74-19496 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15705 74-15706 74-15712 ing
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CB-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-l concept aircraft [NASA-TM-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a t and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externa blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIRCRAFT MAINTENANCE Equipment for aircraft and helicopter techni servicing Russian book Engine condition monitoring - The Alitalia a	874-15715 ing 874-15716 874-15729 akeoff Lift 874-16720 L of an 874-16742 tip fan 874-16749 119 174-16753 .cal	Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [AIAA PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WB2-TW-901(WB/D)] A nonlinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system powered elevator system for modified C-8A aircraft for STOL operation [WBSA-CR-114727] A simplified flight-test method for determin aircraft takeoff performance that includes	tics 74-19489 74-19490 74-19496 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15705 74-15706 74-15712 ing
[NASA-CR-114688] Noise measurements obtained during engineer: evaluation of two-segment approaches in a 727-200 aircraft [NASA-CR-114691] Two dimensional air cushion landing system peripheral jet configuration study [AD-769494] Computer programs for estimating aircraft te and landing performance applied to conventional, vectored lift, and powered-doncept aircraft [NASA-TM-X-62333] Drop and static tests on a tenth-scale model Air Cushion Landing System (ACLS) [AD-770026] Study of reverse-flow characteristics of a te and an ejector for application to air cushion landing system [AD-770080] Aircraft antiskid analysis verification and refinement [AD-770300] STOL tactical aircraft investigation-externa blown flap. Volume 6: Air cushion landing system trade study [AD-770448] AIRCRAFT BAINTENANCE Equipment for aircraft and helicopter techni servicing Russian book Engine condition monitoring - The Alitalia a Hazard function monitoring of airline compon	874-15715 ing 874-15716 874-15729 akeoff Lift 874-16720 L of an 874-16742 tip fan 874-16749 119 174-16753 .cal	Longitudinal stability for supersonic transpaircraft S-3A initial operational test and evaluation Vectored thrust V/STOL shipboard testing BD-5 flight test program report Art of the Stretch 8. I DC 8-63 flight instruments, takeoff performance, minimum control speed Explanations and remarks on standards for fluechanics Wind modification over the flight decks of, high-speed ships [ATAN PAPER 74-301] Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed [WRE-TW-901(WR/D)] A nonlinear relay model for post stall oscil [AD-769405] Design of a powered elevator control system powered elevator system for modified C-8A aircraft for STOL operation [WASA-CR-114727] A simplified flight-test method for determin aircraft takeoff performance that includes effects of pilot technique	tics 74-19489 74-19490 74-19496 74-19500 74-20274 ight 74-20522 74-21291 aircraft 74-15705 74-15706 74-15712 ing

Commander was a series of the	Design and fabrication of a boron/aluminum
Computer programs for estimating aircraft takeoff and landing performance applied to	composite wing box test specimen
conventional, vectored lift, and powered-lift	[AD-770203] H74-16741
CONCept aircraft [MASA-TM-Y-62333] W74-16720	Program to improve the fracture toughness and fatigue resistance of aluminum sheet and plate
[BASA-TH-I-62333] H74-1672U AIRCRAFT PRODUCTION	for aircraft applications
General Dynamics lightweight fighter P-16	[AD-770350] N74-17278
aircraft development and production h74-21320	AIRCRAFT SURVIVABILITY The Fairchild Industries A-10 - Designed for close
The HS.146 - A four-jet feeder-liner	air support A74-21726
Use of simulation for the development of Concorde N74-16733	AIRCHAFT WAKES Trailing vortex effects on following aircraft
AIRCRAFT RELIABILITY	A74-19778
Reliability and choosing number of prototypes in helicopter development program	Blectromagnetic effects of aircraft wake-active feuillet interaction 174-19915
A74-20938	Vortexes in aircraft wakes light aircraft
Bisk analysis - A program management tool for environmental problems and aircraft metal fatique	hazards
à74-20987	A74-22206 Acoustic scattering from an aircraft trailing worter
AIRCRAFT SAFFTY Problems in civil air traffic control which SAW	n74-16377
technology may impact Surface Acoustic Wave	AIRPOIL PROFILES Unsteady viscous flow on oscillating airfoils
devices A74-19390	[AIAA PAPER 74-182] A74-20774
Realization of a horizontal collision avoidance	AIRPOILS
system	The high subsonic flow around a two-dimensional
A74-20099	aerofoil with a trailing edge control surface
Zeppelins - Not again airship operational hazards	A prediction model for wake related sound
A74-20167	generation by single airfoils and subsonic rotors 874-15700
Safety during automatic landing with poor visibility A74-20422	Numerical calculations of velocity and pressure
The design application of aircraft securing and	distribution around oscillating airfoils
traversing systems to the surface effect ship	[NASA-CR-2368] N74-16704
[AIAA PAPER 74-304] A74-21293	Calculation of the displacement effect in two-dimensional subsonic attached flow around
Calculation and observance of landing parameters for the aircraft IL-62 and their effect on the	aerofoils. Examples of calculations using
safety factor	neasured displacement thicknesses
A74-22270 Application of the collision-imparted velocity	[NIR-TR-72116-U] B74-16707 AIRPRAME MATERIALS
method for analyzing the responses of	Long range view of materials research for civil
containment and deflector structures to engine	transport aircraft A74-20210
rotor fragment impact [NASA-CR-134494] N74-16592	Advanced composites in aerospace structural
AIRCRAFT STABILITY	design
FAA certification of the S-58T helicopter for	[AIMA PAPER 74-242] A74-20834 AIRPRAMES
instrument flight. I A74-19491	Plan for developing structural criteria for
PAA certification of the S-58T helicopter for	composite airframes A74-20945
instrument flight. II A74-19492	Changes in flutter results by stiffening some
Trailing wortex effects on following aircraft	degrees of freedom flutter analysis of
A74-19778 The influence of non-linear longitudinal	elastically connected aircraft structures with low masses
aerodynamic characteristics on the power	[TR+195] N74-15709
spectral response of aircraft to atmospheric	Design quide for the use of structural shapes in aircraft applications. Part 1: Selection
turbulence	criteria for structural shapes and tubing. Part
Dynamic stability of sweptback aircraft wings	Manufacturing methods for structural shapes
under the action of variable aerodynamic forces	and tubing [AD-769042] N74-15723
A74-22225 Aerodynamic analysis of various flight conditions	AIRLINE OFFRATIONS
of conventional aircraft. IX - Merodynamic	The fuel crisis and the controller turbolet aircraft descent trajectories for fuel
foundations /General Survey/ A74-22273	consumption reduction
A method for measuring the dynamic stability Cyr	A74-19726
in a subsonic wind tunnel	A look at the British ATC scene. II primary and secondary radar systems development
[REFT-1427] N74-15701 An optimal control approach to airplane stability	A74-19727
augmentation systems design	The airship can meet the energy challenge
#74-16712 The results of a high-speed wind tunnel test to	Engine condition monitoring - The Alitalia approach
investigate the effects of the NASA refan JT8D	A74-20825
engine macelles on the stability and control	Aircraft life cycle profitability - The operator's
characteristics of the Boeing 727 airplane [MASA-CB-134545] #74-16726	challenge [AIAA PAPER 74-281] A74-20837
ATRODAR GORICTURES	Simulation of dispatch reliability for a fleet of
Airplane macelle composite structure technology	large commercial aircraft
A74-22102 An investigation of cost factors relating to class	Bazard function monitoring of airline components
4 aircraft modifications	174-20967
[AD-769195] N74-15730 Transparent fire resistant polymeric structures	Aircraft accident reports: Brief format, supplemental issue, 1972 accidents
CN163-CASE-ARC-10813-11 N74-16249	
the state of state of	[0100 01 (4 (4)
In situ non-destructive testing of aircraft	AIRPLANE PRODUCTION COSTS
In situ non-destructive testing of diferent structures by holographic interferometry [RAB-TR-72218] #74-16734	[0100 01 (4 (4)

AIRPORT PLANNING SUBJECT INDEX

AIRPORT PLANNING		ANTISKID DEVICES	
Foise problems in airport design and in c aircraft operation	1711	Aircraft antiskid analysis verification an	ıd
war-order obergeror	A74-19476	refinement [AD-770300]	W711 45000
Airports evolution and qualification		ANTISUBHARINE WARPARE	N74-16749
Air traffic control scheme through simula	A74-19481	Helicopter applications at sea	
are vicinic concide schede through stadia	A74-20663	APPROACH CONTROL	A74-19690
Simulation studies of an airport noise si	lencer A74-21641	The national Microwave Landing System	370.10745
Advanced subscnic long-haul transport ter	minal	Design of a flight director/configuration	A74-19317
area compatibility study. Volume 1: Compatibility assessment		management system for piloted STOL appro	naches N74-15715
[NASA-CR-132367]	N74-16729	APPROXIMATION	2774 .3713
Advanced subsonic long-haul transport term area compatibility study. Volume 2: Re	minal	Quasi homogeneous approximations for the	
and technology recommendations	esearch	calculation of wings with curved subsoni leading edges flying at supersonic speed	.c
[NASA-CR-132368]	N74-16730	[YTH-173]	15 1974-16708
AIRPORTS Statistical analysis of aircraft noise le	wala	ARROW WINGS	
a description and description of discrete noise to	A74-19638	Quasi homogeneous approximations for the calculation of wings with curved subsoni	_
Reduction of aircraft noise in the vicinit airports	ty of	leading edges flying at supersonic speed	ls
[NASA-TT-P- 15237]	¥74-15718	[VTH-173] ATHOSPHERIC CHEMISTRY	N74-16708
Atmospheric pollution by aircraft engines		Possible effects of a fleet of supersonic	
[AD-769655] AIHSHIPS	N74-17376	transports on the stratospheric ozone sh	
The airship can meet the energy challenge		ATHOSPHERIC MODELS	A74-20125
	A74-20166	Atmospheric ozone - Possible impact on	
Zeppelins - Not again airship operation hazards	onal	stratospheric aviation	
ndzards	A74-20167	LEVACDERTA PRINTER	A74-20039
The Dolphin airship with undulating propul	lsion	ATMOSPHERIC REPRACTION Electromagnetic effects of aircraft wake-a	~+4
system - A new form of the evaluation fa	actor	feuillet interaction	Ctive
A comparative economic analysis of a	A74-22272	384045 #FFFF	A74-19915
lighter-than-air logistics system		ATMOSPHERIC TEMPERATURE Atmospheric ozone - Possible impact on	
[AD-769205]	N74-16694	stratospheric aviation	
ALL-WEATHER AIR MAVIGATION Safety during automatic landing with poor	vicihilite	lenochung munoutoron	A74-20039
	374-20422	ATHOSPHERIC TURBULENCE The influence of non-linear longitudinal	
Plight test safety analysis of the all wea	ather -	aerodynamic characteristics on the power	
landing system /ANLS/ program	A74-20974	spectral response of aircraft to atmosphe	eric
ALLOYS	Z/4-205/4	turbulence	
Hot corrosion of metals, alloys and cerami		ATTACK AIRCRAPT	A74-21105
[AD+769340] ALTIMETERS	N74-15829	SAAB digital flight control for Viggen	aircraft
[AD-769340] ALTIMETERS Evaluation and redesign of FAA altimeter p	N74-15829	SAAB digital flight control for Viggen [AIAA PAPER 74-26]	
[AD-769340] ALTIMETERS Evaluation and redesign of FAA altimeter p [AD-769540]	N74-15829	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic	aircraft A74+20754
[AD-769340] ALTHBERES Evaluation and redesign of FAA altimeter p [AD-769540] ALUHRUM Technology of production of sandwich panel	N74-15829 Pack N74-16164	SAAB digital flight control for Viggen [AIAA PAPER 74-26]	aircraft A74-20754 d-air
[AD-769340] ALTIMETERS Evaluation and redesign of FAA altimeter p [AD-769540]	N74-15829 Pack N74-16164	SAAB digital flight control for Viggen [ALIAN PAPER 74-26] AUTOMARIC CONTBOL The automatic aircraft quidance law for mic collision avoidance	aircraft A74+20754
[AD-769340] ALTHRERS Evaluation and redesign of FAA altimeter p [AD-769540] ALUHINUM Technology of production of sandwich panel aluminum homeycomb.cores	N74-15829 Pack N74-16164	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic	aircraft 174-20754 d-air 174-21340
[AD-769340] ALTHEFERS Evaluation and redesign of FAA altimeter p	N74-15829 Dack B74-16164 Le with A74-20523	SAAB digital flight control for Viggen [ALIAN PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian	aircraft A74-20754 d-air A74-21340 book A74-19374
[AD-769340] ALTHERERS Evaluation and redesign of FAA altimeter p	N74-15829 Dack B74-16164 Le with A74-20523	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL	aircraft A74-20754 d-air A74-21340 book A74-19374
[AD-769340] ALTHRERS Evaluation and redesign of FAA altimeter p [AD-769540] ALUHINUM Technology of production of sandwich panel aluminum honeycomb.cores ALUHINUM ALLOYS Effect of polymer coatings on fatigue stre aluminum alloy 2024 box beams [NASA-CE-114699]	N74-15829 pack	SAAB digital flight control for Viggen [ALIAN PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Flight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance	aircraft A74-20754 d-air A74-21340 book A74-19374 tal
[AD-769340] ALTHEFERS Evaluation and redesign of FAA altimeter p	N74-15829 pack	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC PLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft
ALTHRERS Evaluation and redesign of FAA altimeter p	N74-15829 pack	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26]	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754
[AD-769340] ALTHERERS Evaluation and redesign of FAA altimeter p [AD-769540] ALUNINUM Technology of production of sandwich panel aluminum homeycomb.cores ALUNINUM ALLOYS Effect of polymer coatings on fatigue stre aluminum alloy 2024 box beams [NASA-CE-114699] Program to improve the fracture toughness fatique resistance of aluminum sheet and for aircraft applications [AD-770350]	N74-15829 pack	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC PLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754
ALTHRERS Evaluation and redesign of FAA altimeter p	N74-15829 Dack 874-16164 E. with A74-20523 Enqth of N74-16250 and plate 874-17278	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 a book
[AD-769340] ALTHERERS Evaluation and redesign of FAA altimeter p [AD-769540] ALUNINUM Technology of production of sandwich panel aluminum homeycomb.cores ALUNINUM ALLOYS Effect of polymer coatings on fatigue stre aluminum alloy 2024 box beams [NASA-CE-114699] Program to improve the fracture toughness fatique resistance of aluminum sheet and for aircraft applications [AD-770350]	N74-15829 pack	SAAB digital flight control for Viggen [ALIAN PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [ALIAN PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 a book
ALTHRERS Evaluation and redesign of FAA altimeter p	N74-15829 Dack 874-16164 E. with A74-20523 Enqth of N74-16250 and plate 874-17278	SAAB digital flight control for Viggen [AIAA FAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Flight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 a book
ALTINETERS Evaluation and redesign of FAA altimeter p	N74-15829 pack	SAAB digital flight control for Viggen [ALIAN PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [ALIAN PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABBING CONTROL	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 nook A74-20919 ivil and
ALTHRERS Evaluation and redesign of FAA altimeter p	N74-15829 cack	SAAB digital flight control for Viggen [AIAA FAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Flight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729
ALTHRERS Evaluation and redesign of FAA altimeter p	N74-15829 pack	SAAB digital flight control for Viggen [ALIAN PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [ALIAN PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABBING CONTROL Safety during automatic landing with poor we design of a flight director/configuration	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 h book A74-20919 ivil and A74-21729 visibility A74-20422
ALTINETERS Evaluation and redesign of FAA altimeter p	N74-15829 cack	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Flight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LANDING CONTROL Safety during automatic landing with poor we besign of a flight director/configuration management system for piloted STOL approa	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422
ALTHRERS Evaluation and redesign of FAA altimeter p	N74-15829 cack	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LANDING CONTROL Safety during automatic landing with poor volume of a flight director/configuration management system for piloted STOL approal [NASA-CR-114688] AUTOMATIC PILOTS	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches 874-15715
ALTIBETAS ALTINETERS Evaluation and redesign of FAA altimeter p	N74-15829 Dack N74-16164 Le with A74-20523 Enqth of N74-16250 and Entry of N74-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LANDING CONTROL Safety during automatic landing with poor volume of a flight director/configuration management system for piloted STOL approal [NASA-CR-114688] AUTOMATIC PILOTS	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches 874-15715
ALTIBETES Evaluation and redesign of FAA altimeter p	N74-15829 Dack N74-16164 Le with A74-20523 Enqth of N74-16250 and Entry of N74-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753	SAAB digital flight control for Viggen [AIAA FAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC PLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABDING CONTROL Safety during automatic landing with poor w Design of a flight director/configuration management system for piloted STOL approa [NASA-CR-114688] AUTOMATIC PILOTS Safety during automatic landing with poor w	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches 874-15715
ALTINETERS Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 Le with A74-20523 Enqth of N74-16250 and plate 874-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753 Cation	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABBING CONTROL Safety during automatic landing with poor v Design of a flight director/configuration management system for piloted STOL approa [NASA-CR-114688] AUTOMATIC PILOTS Safety during automatic landing with poor v AUTOMATIC TEST RQUIPMENT Putting the computer in its place Autom	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches M74-15715 visibility A74-20422
ALTINETERS Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 E with A74-20523 Enqth of N74-16250 and plate 874-17278 tal A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABDING CONTROL Safety during automatic landing with poor wanagement system for piloted STOL approaution management system for piloted STOL approaution of the story of	aircraft A74-20754 d-air A74-21340 book A74-19374 tall A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches B74-15715 visibility A74-20422
ALTIMETERS Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 E with A74-20523 Enqth of N74-16250 and plate 874-17278 tal A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABDING CONTROL Safety during automatic landing with poor wanagement system for piloted STOL approaution management system for piloted STOL approaution production of the story of the	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches M74-15715 visibility A74-20422
ALTIBETES Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 E. with A74-20523 Enqth of N74-16250 and I plate 874-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOBATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen fAIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for cimilitary aircraft AUTOMATIC LAMDING CONTROL Safety during automatic landing with poor with the system for piloted STOL approaution management system for piloted STOL approaution for the system for aircraft flight test AUTOMATIC TEST EQUIPMENT Putting the computer in its place Autom Telemetry System for aircraft flight test AUTOMICS Lockheed S-3A avionics - Transmitting data	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches B74-15715 visibility A74-20422 aches B74-19497
ALTINETERS Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 E. with A74-20523 Enqth of N74-16250 and I plate 874-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT COMTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight quidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LAMDING CONTROL Safety during automatic landing with poor we be sign of a flight director/configuration management system for piloted STOL approaution [NASA-CR-114688] AUTOMATIC PILOTS Safety during automatic landing with poor we will be sufficiently system for aircraft flight test AVIONATIC TEST RQUIPMENT Putting the computer in its place Autom Telemetry System for aircraft flight test AVIONICS Lockheed S-3A avionics - Transmitting data multiprocessor computer	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-20754 aircraft A74-20754 book B74-1977 by
ALTIBETES Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 E. with A74-20523 Enqth of N74-16250 And I plate 874-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842 S A74-19228 Ctive	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABBING CONTROL Safety during automatic landing with poor with the proof of the	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-20422 wisibility A74-20422 aches B74-15715 visibility A74-20422 aches B74-19497
ALTIBETES Evaluation and redesign of FAA altimeter p	N74-15829 Pack N74-16164 E. with A74-20523 Enqth of N74-16250 And I plate N74-17278 Rtal A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842 S A74-19228 ctive A74-19915	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LANDING CONTROL Safety during automatic landing with poor we be sign of a flight director/configuration management system for piloted STOL approaution for the system for piloted STOL approaution for the system for piloted STOL approaution for the system for aircraft flight test AUTOMATIC TEST EQUIPMENT Putting the computer in its place Automatic tenetry System for aircraft flight test AVIONICS Lockheed S-3A avionics - Transmitting data multiprocessor computer Display systems - An airborne look ahead	aircraft A74-20754 d-air A74-21340 book A74-19374 tal A74-20754 aircraft A74-20754 book B74-1977 by
ALTIBETES Evaluation and redesign of FAA altimeter p	N74-15829 Pack 874-16164 E. with A74-20523 Enqth of N74-16250 And I plate 874-17278 Ital A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842 S A74-19228 Ctive	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTROL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABBING CONTROL Safety during automatic landing with poor with the proof of a flight director/configuration management system for piloted STOL approaution [NASA-CR-114688] AUTOMATIC PILOTS Safety during automatic landing with poor with the computer in its place Automatic Test RQUIPMENT Putting the computer in its place Automatic Telemetry System for aircraft flight test AVIONICS Lockheed S-3A avionics - Transmitting data multiprocessor computer Display systems - An airborne lock ahead Reliability demonstration testing using	aircraft A74-20754 d-air A74-21340 book A74-19374 tall A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches B74-15715 visibility A74-20422 aches B74-19497 by A74-19754
ALTIBETES Evaluation and redesign of FAA altimeter p	N74-15829 Pack N74-16164 E. with A74-20523 Enqth of N74-16250 And I plate N74-17278 Rtal A74-19751 Ce power A74-19464 d data A74-19753 Cation N74-15842 S A74-19228 ctive A74-19915	SAAB digital flight control for Viggen [AIAA PAPER 74-26] AUTOMATIC CONTBOL The automatic aircraft quidance law for mic collision avoidance AUTOMATIC FLIGHT CONTROL Plight vehicle control systems Russian Lockheed S-3A avionics - Three system digit flight guidance SAAB digital flight control for Viggen [AIAA PAPER 74-26] Reliability of adaptive systems Russian on flight control The evolution of electronic displays for ci military aircraft AUTOMATIC LABBING CONTROL Safety during automatic landing with poor was an agement system for piloted STOL approau [WASA-CR-114688] AUTOMATIC PILOTS Safety during automatic landing with poor was allowed the computer in its place Automatic Test RQUIPMENT Putting the computer in its place Automatic Test System for aircraft flight test AVIONICS Lockheed S-3A avionics - Transmitting data multiprocessor computer Display systems - An airborne look ahead Reliability demonstration testing using failure-free trials	aircraft A74-20754 d-air A74-21340 book A74-19374 tall A74-19751 aircraft A74-20754 n book A74-20919 ivil and A74-21729 visibility A74-20422 aches B74-15715 visibility A74-20422 aches B74-19497 by A74-19754

SUBJECT INDEX

•			
DC-10 avicnics parts reliability in review	A74-20969	BOUNDARY LAYERS Flight experience with a pivoting traversi	рģ
The evolution of electronic displays for c		boundary-layer probe [NASA-TH-X-56022]	N74-16102
military aircraft	A74-21729	NASA-Th-1-30022)	
An investigation of airborne displays and for Search And Rescue (SAR). Volume 9:	Project	C S ATROPAGE	
Sea Scanner avionics and sensor system [AD-770548]	N74-16754	C-5 AIRCRAFT C-51/orbiter wind tunnel testing and analy	sis:
NIAL PLOW PUMPS	4 h	Piggyback ferry [NASA-CR-133484]	N74-15717
The state of development of axial pumps wi supercavitating cascades		CABLES (ROPES) Helicopter windlass rescue with the Alouet	te III
NIAL FLOW TURBINES	A74-20325	usticohter aruntass resear and	A74-21705
Selection of the economically optimal blad	le	CAMOPIES Transparent fire resistant polymeric struc	tures
profile for axial fluid flow engines	A74-20311	[NASA-CASE-ARC-10813-1]	N74-16249
XISYMMETRIC PLOW Analysis of axisymmetric turbulence releva	int to	The airship can meet the energy challenge	A74-20166
jet noise	174-19631	CASCADE PLOW	
_		The state of development of axial pumps wi supercavitating cascades	
В		•	A74-20325
3-52 AIRCRAFT An analysis of the phased inspection systematics are also as a second systematic and a second systematics.	en for	CERABICS Hot corrosion of metals, alloys and cerami	ics N74-15829
B-52H aircraft analysis of cost red increasing flying hours between inspect:	iction by	[AD-769340]	B74-15023
[AD-769154]	N74-16695	FAA certification of the S-58T helicopter instrument flight. I	101
BALL BEARINGS US Army helicopter rod and bearing reliab	ility and	PAA certification of the S-58T helicopter	A74-19491
maintainability investigation	N74-15724	instrument flight. II	
[AD-768843] BALLISTIC BANGES	·	CHARRELS (DATA TRANSMISSION)	<u> 19492</u>
Ames research facilities summary 1974 tunnels, shock tubes, ballistic ranges,	Ilight	Some transmission characteristics of abbut	SAT-type
simulators, research aircraft, and comp	uters N74-15939	air traffic control systems	<u>174-19957</u>
[WASA-TM-X-69411] BERYLLIUE ALLOYS		CHEMICAL COMPOSITION Composition and chemical stability of mote	or fuels
Design quide for the use of structural sh aircraft applications. Part 1: Select	101	(AD-770538)	N74-16870
criteria for structural shapes and tubi 2: Manufacturing methods for structura	ng Part	CHEMICAL BRACTIONS Possible effects of a fleet of supersonic	L1 - 1 A
and tubing	ม74-15723	transports on the stratospheric ozone si	A/4-20127
[AD-769042] BIRDS		Composition and chemical stability of mot	or fuels N74-16870
An experimental investigation of a high l device on the owl wing	111	CHARRS (RESTRICTIONS)	n.a
[AD-769492]	¥74-15707	A study of the characteristics of measuri elements of pneumonic systems	
BLUNT BODIES Flow of hydrogen-oxygen mixtures around b	lunted	CIVIL AVIATION	17 4-19852
hodies moving at high velocity	A74-22304	Parameters of BF flight navigation aids a measurement Russian book	nd their
BORING 727 AIRCRAFT VITAL II Virtual Image Takeoff and La	nding		A74-19371
system in Boeing 727 flight simulator	A74-20275	Problems in civil air traffic control whi technology may impact Surface Acous	tic Wave
Noise measurements obtained during engine evaluation of two-segment approaches in	ering a	devices	A74-19390
727-200 aircraft	N74-15716	Noise problems in airport design and in c aircraft operation	
[NASA-CB-114691] The results of a high-speed wind tunnel t	est to	Airports evolution and qualification	A74-19476
investigate the effects of the MASA re-	ntrol		<u> 274-19481</u>
characteristics of the moeing /2/ milps	lane N74-16726	Helicopter applications at sea	A74-19690
[NASA-CR-134545] BOBING 747 AIRCRAFT	-	A look at the British ATC scene. II p and secondary radar systems development	<u>L</u>
Evaluation of effectiveness of various us	on model	Long range view of materials research for	8/4-12/2/
tests in a large towing basin [NASA-CE-2202]	¥74-15710	transport aircraft	A74-20210
DANNES TATE COMPROL	harnally	Aircraft accident reports: Brief format,	
STOL tactical aircraft investigation, ex- blown flap. Volume 2: Design compend:	lun .	supplemental issue, 1972 accidents [NTSB-BA-73-10]	¥74-16722
[AD-770110]	M / 4- (0 / 3 /	COLUDA RPPRCT	- for
Attachment-line flow on an infinite swep	t wing 174-20293	A new pneumatic hybrid control system reduction of supply air consumption	
BOUNDARY LATER SEPARATION		COCKPITS	A74-19884
Realization of the power amplification e	of	High acceleration cockpit: The maneuver: countermeasure cockpit design for:	ing improved
boundary layer separation	A74-20069	pilot performance	n74-16743
Unsteady viscous flow on oscillating air	foils A74-20774	[AD-770287] Report on the Conference on Transparent	
(AIAA PAPER 74-182) A nonlinear relay model for post stall o	scillations	Enclosures [AD-769372]	N74-1675
[AD-769405]	m74-15706	(mm	

COLD FLOW TESTS SUBJECT INDEX

COLD FLOW TESTS Effect of configuration variation on extention blown flap noise	rnally	Realization of a horizontal collision av System	oidance
FAIAA PAPER 74-190]	A74-20775	COMPUTERIZED SIMULATION	A74-20099
COLLISION AVOIDANCE Realization of a horizontal collision avo system	idance	VITAL II Virtual Image Takeoff and L system in Boeing 727 flight simulator	
The automatic aircraft quidance law for m collision avoidance	A74-20099 id-air	Winter Simulation Conference, Washington January 14-16, 1974, Proceedings. Volu	me 2
COLUMNS (SUPPORTS)	A74-21340	Air traffic control scheme through simul	A74-20662 ation
Column failure of thin-walled compression in aircraft wings as affected by wall imperfection and crushing	members	Simulation of dispatch reliability for a large commercial aircraft	A74-20663 fleet of
[VTH-175] COMBUSTIBLE PLOW Flow of hydrogen-oxygen mixtures around b. bodies soving at high velocity	N74-16737 Lunted	Role of computerized simulation in the p aeromautical equipments or systems to hydraulic pump and air intake desig	annlind
	A74-22304	COMPUTEES `	N74-16811
COMMERCIAL AIRCRAFT Trends in hydraulic systems of commercial transport aircraft		Ames research facilities summary 1974 tunnels, shock tubes, ballistic ranges	- flight
Noise problems in airport design and in ca	&74-19471 Lvil	simulators, research aircraft, and comp [NASA-TM-I-69411] CONCOBDE AIRCRAPT	N74-15939
Airports evolution and qualification	A74-19476	Longitudinal stability for supersonic tra aircraft	
Simulation of dispatch reliability for a management of the state of th	174-19481 fleet of	Various mechanisms applied to the Concord landing gear	
COMPONERT RELIABILITY	A74-20952	Use of simulation for the development of	A74-20548 Concorde N74-16733
Hazard function monitoring of airline comp	174-20067	An approximate method for the second	
DC-10 avicnics parts reliability in review COMPOSITE MATERIALS	174-20969	An approximate method for the calculation pressure distribution on a wing-cone co	or the onfiguration A74-20046
Advanced composites in aerospace struc	toral	COMPERENCES	
design FAIAA PAPER 74-2421 Plan for developing structural criteria fo composite airframes	370-70024	Component performance and systems applica surface acoustic wave devices; Proceedi the International Specialist Seminar, & Scotland, September 25-28, 1973	ings of
High-performance composite materials for v construction: An elastoplastic analysis crack propagation in a unidirectional co [AD-769867] COMPOSITE STRUCTURES	of	Conference on Decision and Control, 4th a Symposium on Adaptive Processes, 12th, Diego, Calif., December 5-7, 1973, Proc Winter Simulation Conference, Washington,	San ceedings A74-20076
Plan for developing structural criteria fo composite airframes	г	January 14-16, 1974, Proceedings. Volum International Conference on Cybernetics a	le 2
Airplane nacelle composite structure techn		Society, Boston, Mass., November 5-7, 1 Proceedings	973,
COMPRESSIBILITY BPFECTS	A74-22102	CONICAL FLOW	A74-21335
Compressibility effects in unsteady thin-a theory		Calculation of supersonic flow past conic	al bodies A74-19935
COMPRESSIBLE PLON	A74-20298	CONSTRUCTION MATERIALS Long range view of materials research for	nimil
Plexible lifting surfaces in steady in compressible flow		transport aircraft	A74-20210
Research on aircraft dynamics for subsonic	A74-19684 flight	CONTAINERS Evaluation and redesign of FAA altimeter	
[AD-770540] COMPRESSION LOADS Column failure of thin-walled compression	N74-16738	CONTAINERS	N74-16164
in aircraft wings as affected by wall imperfection and crushing	embers	Application of the collision-imparted well method for analyzing the responses of	
(VTH-175) COMPOTER DESIGN	N74-16737	containment and deflector structures to rotor fragment impact	engine
Lockheed S-3A avionics - Transmitting data multiprocessor computer	by	[NASA-CR-134494] CONTRACT MANAGEMENT	N74-16 592
COMPUTER PROGRAMS	A74-19754	Equipment procured reliability and real-1: survival avionics producer-military	ife user
Computer programs for estimating aircraft t		communications improvement	A74-20954
conventional, vectored lift, and powered- concept aircraft	lift	CONTROL STABILITY An optimal control approach to airplane st augmentation systems design	tability
[NASA-TH-X-62333] COMPUTER STORAGE DEVICES	N74-16720	CONTROL SURFACES	B74-16712
Lockheed S-31 avionics - Transmitting data multiprocessor computer		The high subsonic flow around a two-dimens aerofoil with a trailing edge control su	sional
COMPUTER TECHNIQUES	174-19754		274_2110A
Putting the computer in its place Autom Telemetry System for mircraft flight test	ated	Changes in flutter results by stiffening s degrees of freedom flutter analysis	ο . Ε
Lot dilutait fiight test	s 174-19497	elastically connected aircraft structure low masses	es with
		[TB-195]	N74-15709

SUBJECT INDEX DISPLAY DEVICES

CONTROL THEORY	DC 8 AIRCRAPT
Conference on Decision and Control, 4th and	Art of the Stretch 8. I DC 8-63 flight
Symposium on Adaptive Processes, 12th, San	instruments, takeoff performance, minimum
Diego, Calif., December 5-7, 1973, Proceedings	control speed
A74-20076	174-20274
Digital adaptive model following control for	OC 10 AIRCRAFT
lateral aircraft dynamics	DC-10 avionics parts reliability in review
A74-21338	DECISION MAKING
CORRELATION Correlational ground speed meters and drift	Conference on Decision and Control, 4th and
indicators of flight vehicles Russian book	symposium on Adaptive Processes, 12th, San
A74-20900	Diego, Calif., December 5-7, 1973, Proceedings
COBRELATION COEFFICIENTS	A74-20076
The reduction of garbling in secondary	DEGREES OF FREEDOM
surveillance radar	Description of six degree of freedom rigid aircraft mathematical models numerical
≥74-19391	analysis of flight dynamics of high speed aircraft
COBBOSION	[WRE-TK-901(WR/D)] N74-15702
Hot corrosion of metals, alloys and ceramics [AD-769340] #74-15829	DRLTA WINGS
COST AWALTSIS	Subsonic potential aerodynamics for complex
Selection of the economically optimal blade	configurations - A general theory
profile for axial fluid flow engines	Numerical solution of the problem of supersonic
A74-20311	gas flow over the upper surface of a delta wing
Aircraft life cycle profitability - The mapufacturer's challenge	in the expansion region
[AIAA PAPER 74-280] A74-20836	174-22283
Aircraft life cycle profitability - The operator's	Analysis of the flow about delta wings with
challenge	leading edge separation at supersonic speeds
[AIRA PAPER 74-281] A74-20837	[NASA-CR-132358] N74-15704 DEMAND (ECONOMICS)
Some experiences from the use of an LCC approach	Energy problems in air transportation options
Life Cycle Cost for weapon systems acquisition A74-20944	for demand reduction, efficiency increase and
The single-engine turboprop in the northern frontier	fuel alternatives
A74-21821	A74-19479
A comparative economic analysis of a	<pre>DESCENT TRAJECTORIES The fuel crisis and the controller turbojet</pre>
lighter-than-air logistics system	aircraft descent trajectories for fuel
[AD-769205] Maintainability analysis of major helicopter	consumption reduction
components analysis of man-hour costs for	174-19726
maintaining military helicopters	DETONABLE GAS MITTURES
[AD-769941] N74-16740	Plow of hydrogen-oxygen mixtures around blunted bodies moving at high velocity
COST REFECTIVENESS	A74-22304
An analysis of the phased inspection system for B-52H aircraft analysis of cost reduction by	DETONATION WAVES
increasing flying hours between inspections	Plow of hydrogen-oxygen mixtures around blunted
[AD-769154] N74-16695	bodies moving at high velocity
CRACK PROPAGATION	A74-22304
Photoelastic analysis of the stress field	DBC 5 AIBCRAFT The augmentor wing - Powered-lift STOL a proven
surrounding a fatigue crack A74-19259	concept
High-performance composite materials for vehicle	A74-21728
construction: An elastoplastic abalysis of	DIGITAL DATA
crack propagation in a unidirectional composite	Bigh integrity ATC data links A74-19392
[AD-769867] W74-17626	DIGITAL HAVIGATION
CRUISING FLIGHT The influence of non-linear longitudinal	A digital fly-by-wire technology development
aerodynamic characteristics on the power	program using an F-BC test aircraft
spectral response of aircraft to atmospheric	[AIAA PAPER 74-28] A74-20755
turbulence	DIGITAL RADAR SYSTEMS
A74-21105	Recent advances in air traffic control radars
CYBERHETICS International Conference on Cybernetics and	DIGITAL SYSTEMS
Society, Boston, Mass., November 5-7, 1973,	Lockheed S-3A avionics - Three system digital
Proceedings	flight guidance
A74-21335	A74-19751
_	A new pneumatic hybrid control system for reduction of supply air consumption
D	A74-19884
DATA CORRELATION	Digital adaptive flight controller development
Statistical analysis of aircraft noise levels	174-20120
A74-19638	SAAB digital flight control for Viggen aircraft [ATAA PAPER 74-26] A74-20754
DATA LINKS	[AIAA PAPER 74-26] Digital adaptive model following control for
High integrity ATC data links	lateral aircraft dynamics
DAMA CVCOPNC	A74-21338
Engine condition monitoring - The Alitalia approach	microelectronic phase shifters in X and Q bands
A74-20825	[BLL-PO-2988-(9022.81)] N74-15906 DIGITAL TECHNIQUES
DATA TRANSMISSION	Some transmission characteristics of AEROSAT-type
Bigh integrity ATC data links A74-19392	air traffic control systems
Lockheed S-3A avionics - Tactical voice and data	A74-19957
communication	DISPLAY DRVICES
A/4-19/03	Lockheed S-3A avionics - Three system digital flight quidance
Lockheed 5-3A avionics - Transmitting data by multiprocessor computer	A74-19751
multiprocessor computer A74-19754	VITAL II Virtual Image Takeoff and Landing
	system in Boeing 727 flight simulator
	A74-20275

Display systems - An airborne look ahead	A74-20595	BLECTRICAL PAULTS Preliminary tests of vulnerability of typi	ical
A direct procedure for partitioning scanni workload with a flight director	A74-21336	aircraft electronics to lightning-induce (NASA-CR-2350) A test technique for measuring lightning-	N74-15720
The evolution of electronic displays for c military aircraft		voltages on aircraft electrical circuits [BASA-CR-2348]	74-16716
DPAG Collection of experimental data for aircra	A74-21729	ELECTRO-OPTICS Display systems - An airborne look ahead	
afterbody drag in the transonic and superrange and comparison with theoretical		BLECTROMAGNETIC INTERACTIONS	174-20595
calculation methods [BMVG-FEWT-73-27]	N74-16705	<pre>Plectromagnetic effects of aircraft wake-a feuillet interaction</pre>	A74-19915
DROWE AIRCRAFT		BLECTRONAGERTIC INTERFERENCE	
Simplified navigation for unmanned aircraft DYNAMIC CHARACTERISTICS	174-20098	The effects of interference on monopulse p characteristics of air traffic contr beacons	erformance ol radar
Flight vehicle control systems Russian	A74-19374	(AD-769336) ELECTRORIC EQUIPMENT	N74-15876
The dynamic behavior of a digital electrob actuator	ydraulic	Preliminary tests of vulnerability of typi	cal
[NASA-TT-F-15295]	N74-15736	aircraft electronics to lightning-induce [NASA-CR-2350]	
DINABIC HODELS		A test technique for measuring lightning-i	N74-15720
Digital adaptive model following control - lateral aircraft dynamics		voltages on aircraft electrical circuits [BASA-CR-2348]	¥74-16716
Simulation studies of an airport noise sil		Parameters of RF flight mavigation aids an	
DYNAMIC RESPONSE	A74-21641	measurement Bussian book	
Determination of critical nondimensional parameters in aircraft dynamic response	to	Reliability demonstration testing using failure-free trials	A74-19371
random input (NASA-CR-2361]	¥74-16322	ELEVATION ANGLE	A74-20950
DINAMIC STABILITY		The effect of interfering signals on the	
Dynamic stability of sweptback aircraft wi under the action of variable aerodynamic	ngs	performance of angle of arrival estimate	
the decide of variable delon/Haric	A74-22225	ELEVATORS (CONTROL SURPACES)	A74-19908
<u> </u>		Design of a powered elevator control syste	h
E		powered elevator system for modified C-8 aircraft for STOL operation	A
BCOBORIC PACTORS		[BASA-CR-114727]	N74-15712
The implications for air transportation of shortage	energy A74-19486	EMERGY CONVERSION REFICIENCY Method of calculation of annual overall ef	
Future advanced-technology aircraft in the of an integrated transport system	context	of modern wind-power plants (NASA-TT-F-15310) BMERGY POLICY	874-15748
EDDY VISCOSITY Attachment-line flow on an infinite swept		Energy problems in air transportation of for demand reduction, efficiency increased fine all atternations.	options e and
ELASTIC DEPONMATION	174-20293	Mbo impliantions so to the contract of	A74-19479
Studies of an elastic wing aerodynamic tests	load	The implications for air transportation of shortage	174-19486
BLASTOPLASTICITY	A74-21781	The fuel crisis and the controller tur	bojet
High-performance composite materials for we construction: An elastoplastic analysis	ehicle	aircraft descent trajectories for fuel consumption reduction	
crack propagation in a unidirectional cor	mposite	The airship can meet the energy challenge	.A74-19726
[AD-769867] BLECTRIC ARCS	N74-17626		A74-20166
A test technique for measuring lightning-in	nduced	Aerodynamic problems of turnojet propulsion	•
Voltages on aircraft electrical circuits [NASA-CR-2348]	N74-16716	systems, repercussions on gas turbine des	velopment A74-20313
Practical experience with a digital		Failure of helicopter turbines due to the	
electrohydraulic actuator [NASA-TT-F-15292]	N74-15735	employment of a steel in a corrodible con in combination with a design unsuited for material	ndition c the
The dynamic behavior of a digital electrohy actuator	ydraulic	The circle-resident washing a second	A74-20498
[NASA-TT-P-15295] BLECTRIC GENERATORS	N74-15736	The single-engine turboprop in the northern	174-21821
Equipment for aircraft and helicopter techn servicing Russian book	nical	Failure of helicopter turbines due to the	
The technology and application of free-space	A74-19370 ce power	employment of a steel in a corrodible cor in combination with a design unsuited for material	dition the
transmission by microwave beam	174-19464	ENGINE MONITORING INSTRUMENTS	≱7 4-20498
BLECTRIC POWER PLANTS Method of calculation of annual overall eff		Engine condition monitoring - The Alitalia	approach
[NASA-TT-F-15310]	N74-15748	BRGINE NOISE Some problems associated with noise attenua	
ELECTRIC POWER TRANSMISSION The technical and application of free-space	e nower	jet engine test facilities	
crausmission by microwave peam	A74-19464	Reduction of noise from small turbopropulsi	∆74-1 9629 .on
	- -		<u>174-20760</u>
		NOOT BELEADIN CESTAS ENTERPRISED TOOK	A74-20904

SUBJECT INDEX

Simulation studies of an airport noise silencer	F-15 AIRCRAFT
A74-21641	r-15 progress report. II with emphasis on flight test status and control characteristics
On the effect of quieter aircraft engines on noise	A74-19489
and number index /NNI/ values	P-104 AIRCRAFT
BEGINE TESTS	Flight experience with a pivoting traversing
The case for engine flying test beds for	boundary-layer probe (Nasa-TM-T-560221 N74-16102
aircraft	[[[[]]]]]
A74~19499	<pre>P-111 AIRCRAFT Analysis of control surface augmentation in</pre>
Engine condition monitoring - The Alitalia approach A74-20825	high-performance aircraft by thrust vectoring
ENVIRONMENT EFFECTS	[AD-769495] N74-15726
Atmospheric ozone - Possible impact on	An analysis of the acquisition of the F-111A
stratospheric aviation	simulators ran-7692021 N74-16693
A74-20039	[AD-769202] N74-16693 Aircraft antiskid analysis verification and
Possible effects of a fleet of supersonic	refinement
transports on the stratospheric ozone shield A74-20125	[AD-770300] N74-16749
Urban air traffic and city planning: Case study of	PABRICATION
Los Angeles County Book	Nitinol as a fastener material
A74+20624	
ENVIRONMENT POLIUTION	PAILURE ANALYSIS Equipment procured reliability and real-life
The environment and the gas turbine a74-21874	survival avionics producer-military user
ENVIRONMENTAL CONTROL	conmunications improvement
Wind modification over the flight decks of	174-20954
high-speed ships	Hazard function monitoring of airline components A74-20967
[AIAA PAPER 74-301] A74-21291	DC-10 avionics parts reliability in review
BUVIRONMENTAL BEGINEERING	A74-20969
Risk analysis - A program management tool for environmental problems and aircraft metal fatigue	Risk analysis - 1 program management tool for
174-20987	environmental problems and aircraft metal fatigue
EPOXY BESINS	A74-20987
Transparent fire resistant polymeric structures	US Army helicopter rod end bearing reliability and
(NASA-CASB-ARC-10813-1) N74-16249	naintainability investigation [AD-768843] #74-15724
BRBOR ANALYSIS Analysis of aided inertial navigation systems	PAILURE MODES
performance on international routes	A fatigue failure criterion for fiber reinforced
A74-20096	materials
EULER EQUATIONS OF MOTION	A74-20478
Description of six degree of freedom rigid	PASTEMERS Nitinol as a fastener material
aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft	A74-20208
[WRE-TH-901(WR/D)] N74-15702	PATIGUE (MATERIALS)
EUROPEAN AIREUS	Patique of spacecraft structures
Endurance tests on transport aircraft cockpit	[ESBO-CR(P) +322] N74-16597
window glasses noting European Airbus	Program to improve the fracture toughness and fatigue resistance of aluminum sheet and plate
#74-16732	for aircraft applications
EVASIVE ACTIONS Toward the definition of escape and capture	[AD-770350] N74-17278
regions for a two aircraft pursuit-evasion game	PATIGUE TESTS
considering air to air infrared missile	Photoelastic analysis of the stress field
weapons	surrounding a fatigue crack A74-19259
[AD-770281] N74-17689	A fatigue failure criterion for fiber reinforced
EXHAUST GASES Atmospheric ozone - Possible impact on	materials
stratospheric aviation	A74-20478
A74-20039	Effect of polymer coatings on fatigue strength of
Possible effects of a fleet of supersonic	aluminum alloy 2024 box beams rwasa-cr-1146991 N74-16250
transports on the stratospheric ozone shield A74-20125	[NASA-CR-114699] N/4-16250 Endurance tests on transport aircraft cockpit
The environment and the gas turbine	window glasses noting European Airbus
A74-21874	N74-16732
United States Air Porce aircraft pollution emissions	PIGHTER AIRCRAFT
[AD-769482] N74-17374	Digital adaptive flight controller development 174-20120
EXTERNALLY BLOWS FLAPS	Some experiences from the use of an LCC approach
Effect of configuration variation on externally blown flap noise	Life Cycle Cost for weapon systems acquisition
[AIAA PAPER 74-190] A74-20775	A74-20944
Acoustic characteristics of a large-scale wild	Conceptual options for future aircraft-ship
tunnel model of an upper-surface blown flap	operations [ATAA PAPER 74-300] A74-21290
transport having two engines	[AIAA PAPER 74-300] A74-21290 A new aircraft/ship mating system
(NASA-TH-Y-62319) N74-15719 STOL tactical aircraft investigation-externally	[AIAA PAPER 74-303] A74-21292
warm flam Wolang St Plight control	High acceleration cockpit: The maneuvering
technology. Part 2: Simulation studies/flight	countermeasure cockpit design for improved
control system validation	pilot performance (AD-770287) H74-16743
[AD-770449] N74-16752	(AD-770287) N74-16743 PINANCIAL MANAGEMENT
_	Aircraft life cycle profitability - The
F	nanufacturer's challenge
P-8 AIRCRAFT	[AIAA PAPER 74-280] A74-20836
> a:a:+al fly-by-wire technology development	Aircraft life cycle profitability - The operator's
program using an F-8C test aircraft	challenge [ratal paper 74-281] A74-20837
[AIAA PAPER 74-28] A/4-20/55	[AIAA PAPER 74-281] A74-20837 PINITE DIFFERENCE THEORY
P-14 AIRCRAFT Putting the computer in its place Automated	
	Calculation of Supersonic flow past conical bodies
Telemetry System for aircraft flight tests	Calculation of supersonic flow past conical bodies A74-19935

PLAT PLATES SUBJECT INDEX

PLAT PLATES	Use of simulation for the development of Concorde
Unsteady viscous flow on oscillating airfoils [AIAA PAPER 74-182] A74-20774	N74-1673: Bffect of modified seat angle on air to air weapon
FLEXIBLE WINGS Flexible lifting surfaces in steady inviscid	system performance under high acceleration
compressible flow	[AD-770271] N74-1674; X-22A fixed-base ground simulator facility
A74-19684 Studies of an elastic wing aerodynamic load	[AD-769942] N74-1699 FLIGHT STABILITY TESTS
tests	Tables for flight tests giving reference
PLIGET CHARACTERISTICS A74-21781	atmospheres, calibration velocity, mach number, and sound velocity
A linearized theory for the unsteady motions of a	N74-1572
wing in curved flight [AD-769671] N74-15705	FLIGET TESTS F-15 progress report. II with emphasis on
C-5A/orbiter wind tunnel testing and analysis: Piggyback ferry	flight test status and control characteristics
FIGURE 1617 FNASA-CR-133484 N74-15717 PLIGHT CONDITIONS	174-19489 Longitudinal stability for supersonic transport
Collection of problems on airplane piloting /4th	aircraft 174-1949 (
revised and enlarged edition/ Russian book	FAA certification of the S-58T helicopter for
FLIGHT CONTBOL	instrument flight. I A74-1949
Adaptive systems research in the WASA A74-20095	FAA certification of the S-58T helicopter for
Fixed-base simulation study of decoupled controls	instrument flight. II A74-19492
during approach and landing of a STOL transport airplane	S-3A initial operational test and evaluation
[NASA-TN-D-7363] N74-15703	A74-19496 Putting the computer in its place Automated
An optimal control approach to airplane stability augmentation systems design	Telemetry System for aircraft flight tests A74-19497
N74-16712 STOL tactical aircraft investigation-externally	Vectored thrust V/STOL shipboard testing
blown flap. Volume 5: Flight control	A74-19498 The case for engine flying test beds for
technology. Part 2: Simulation studies/flight control system validation	aircraft
[AD-770449] N74-16752	BD-5 flight test program report
PLIGHT HAZABDS Aircraft accident reports: Brief format,	A74~19500 A digital fly-by-wire technology development
supplemental issue, 1972 accidents	program using an P-8C test aircraft
[NTSB-BA-73-10] N74-16722 PLIGHT INSTRUMENTS	[AIAA PAPER 74-28] A74-20755 Plight test safety analysis of the all weather
Art of the Stretch 8. I DC 8-63 flight	landing system /AWLS/ program
instruments, takeoff performance, minimum control speed	A74-20974 Plight test of the ski equipped Mohawk
A74-20274 Display systems - An airborne look ahead	A74-21820
174- 20595	A simplified flight-test method for determining aircraft takeoff performance that includes
A direct procedure for partitioning scanning workload with a flight director	effects of pilot technique
A74-21336	Plight evaluation of two segment approaches for
FLIGHT MECHANICS Explanations and remarks on standards for flight	jet transport noise abatement [NASA-CR-114735] N74-16995
Ecchanics	FLOW CHARACTERISTICS
A74-20522 Aerodynamic analysis of various flight conditions	A study of the characteristics of measuring elements of pneumonic systems
of conventional aircraft. II - Aerodynamic foundations /General Survey/	A74-19852
A74-22273 ·	Noise characteristics of a turbulent crosswind jet A74-20281
FLIGHT PATHS A linearized theory for the unsteady motions of a	Collection of experimental data for aircraft
wing in curved flight	afterbody drag in the transonic and supersonic range and comparison with theoretical
[AD-769671] N74-15705 FLIGHT SAFETY	calculation methods [BMVG-FBWT-73-27] W74-16705
Flight test safety analysis of the all weather	Study of reverse-flow characteristics of a tip fan
landing system /AWLS/ program	and an ejector for application to air. cushion landing system
PLIGHT SIMULATION Air traffic control scheme through simulation	[AD-770080] N74-16744
174-20663	PLOW DISTRIBUTION Flowfield analysis for successive oblique shock
Fixed-base simulation study of decoupled controls during approach and landing of a STOL transport	wave-turbulent boundary-layer interactions A74-19777
alrplane	PLOW GEOMETRY
STOL tactical aircraft investigation-externally	Analysis of the flow about delta wings with leading edge separation at supersonic speeds
blown flap. Volume 5: Flight control technology. Fart 2: Simulation studies/flight	[NASA-CR-132358] H74-15704
control system validation	FLOW RESISTANCE The Dolphin airship with undulating propulsion
[AD-770449] B74-16752 FLIGHT SIBULATORS	system - A new form of the evaluation factor
VITAL II Virtual Image Takeoff and Landing	FLOURETERS A74-22272
system in Boeing 727 flight simulator A74-20275	Investigations into the possibilities of applying
Ames research facilities summary 1974 wind	the 'Aerodynamic Paradoxon' principle in fluidic devices
tunnels, shock tubes, ballistic ranges, flight simulators, research aircraft, and computers	PLUID POWER A74~19859
1 #454-TG-X-694111 m7n_45050	Realization of the power amplification effect in a
An analysis of the acquisition of the F-111A simulators	ramjet unit by applying the principle of boundary layer separation
[AD-769202] H74-16693	A74-20069

FLOIDIC CIRCUITS		Flow of hydrogen-oxygen mixtures around bl	unted
A study of the characteristics of measuring elements of pneumonic systems	g	bodies moving at high velocity	A74-22304
* *	174-19852	GAS TURBINE REGIMES Clean, bright, and dry jet engine fuel	
FLUIDICS Investigations into the possibilities of a	pplying	contamination control	
the 'Aerodynamic Paradoxon' principle in	fluidic	The environment and the gas turbine	A74-20213
devices	A74-19859	The environment and and also den	A74-21874
PLUTTED ABALISIS		GAS TURBINES Survey of trace metals in distillate fuels	İ
Changes in flutter results by stiffening someone degrees of freedom flutter analysis		Bulve, of cides metall in distance	A74-20217
elastically connected aircraft structure	s with	GENERAL AVIATION AIRCRAFT BD-5 flight test program report	
low masses [TR-195]	N74-15709	pp 3 111911 cone la 2101	A74-19500
Relicopter blade-tip stability in forward	flight %74-16711	GEONETRY Antenna nodeling of the RC-135	
PLY BY WIRE CONTROL	274-10711	[AD-769913]	N74-16960
Digital adaptive flight controller develop	ment A74-20120	GLASS Budurance tests on transport aircraft cock	pit
A digital fly-by-wire technology developme		window glasses noting European Airbu	15 174-16732
program using an P-8C test aircraft (AIAA PAPER 74-28]	A74-20755	Report on the Conference on Transparent Mi	
PRACTURE STRENGTH		Enclosures	N74-16755
Program to improve the fracture toughness fatigue resistance of aluminum sheet and	and plate	[AD-769372] GOVERNMENT PROCUREMENT	
for aircraft applications		an analysis of the acquisition of the P-11	11A
[AD-770350] PUEL CONSUMPTION	N74-17278	simulators [AD-769202]	N74-16693
The implications for air transportation of	energy	GOVERNMENT/INDUSTRY RELATIONS Equipment procured reliability and real-li	fe
sbortage	A74-19486	survival avionics producer-military	user
The fuel crisis and the controller tur	bojet	communications improvement	A74-20954
aircraft descent trajectories for fuel consumption reduction		GROUND EFFECT BACHINES	ŕ
	A74-19726	The design application of aircraft securing traversing systems to the surface effect	ng and : ship
Clean, bright, and dry jet engine fuel	<u>.</u>	[AIAA PAPER 74-304].	A74-21293
contamination control	A74-20213	Two dimensional air cushion landing system peripheral jet configuration study	
Survey of trace metals in distillate fuels	;	[AD-769494]	N74-15729
Requirements on the purity of aircraft fue	174-20217	Drop and static tests on a tenth-scale mod Air Cushion Landing System (ACLS)	iet or an
	A74-205∠4	[AD-770026] Study of reverse-flow characteristics of a	174-16742
FUEL CONTROL Bydrogen-methane fuel control systems for engines	turbojet	and an ejector for application to as cushion landing system	ir
[NASA-CE-121247]	¥74-16493	[AD-770080] STOL tactical aircraft investigation-exter	N74-16744 rnally
FUEL SYSTEMS Bydrogen-methane fuel control systems for	turbojet	blown flap. 'Volume 6: Air cushion land	ling
engines [NASA-CB-121247]	N74-16493	system trade study [AD-770448]	N74-16753
FUEL TABES		GROUND SPEED Correlational ground speed meters and drift	f +
An experimental study of attenuation of sh waves in aircraft fuel tanks	IOCK	indicators of flight vehicles Russia	an book
[AD-769930]	N74-16750	GROUND SUPPORT EQUIPMENT	A74-20900
G		Equipment for aircraft and helicopter tech	hnical
•		servicing Russian book	A74-19370
GAS ANALYSIS Trace spectrometric flame analysis and gas	5	HLH Ground Support Equipment (GSE) prelimi	inary
chromatographic detectors related to jet oil analysis and gas detection	engine	investigation [AD-768842]	N74-15725
[AD-769298]	N74-15830	Advanced tracking and data relay experiment study: Multimode transponder experiment	nts Feanioment
GAS CHROMATOGRAPHY Trace spectrometric flame analysis and gas	5	f NASA-CR-132930 }	N74-16887
chromatographic detectors related to jet oil analysis and gas detection	t engine	Y-22A fixed-base ground simulator facility [AD-769942]	y N74-16997
[AD-769298]	N74-15830	GOSTS	
GAS DETECTORS Trace spectrometric flame analysis and gas	5	Compressibility effects in unsteady thin-a theory	
chromatographic detectors related to jet	t engine		A74-20298
oil analysis and gas detection [AD-769298] GAS DYNAMICS	N74-15830	н	
Simulation studies of an airport noise sil	lencer A74-21641	BANGARS Research and design of a seventy-six (76) span aircraft maintenance hanger with q	
Numerical solution of the problem of super	rsonic	shell endwalls	N74-17001
gas flow over the upper surface of a de- in the expansion region	res Arud	[AD-770299] HARHONIC OSCILLATION	
-	A74-22283	Dynamic stability of sweptback aircraft w. under the action of variable aerodynami.	
Numerical solution of the problem of super	rsonic		A74-22225
qas flow over the upper surface of a de- in the expansion region	lta wing	HAVERR SIDDRIET AIRCRAPT The HS.146 - A four-jet feeder-liner	
TH fitt cottonsess sodesn	A74-22283		<u> 174-21727</u>

HELICOPTEE CONTROL SUBJECT INDEX

SRLICOPTER CONTROL FAR certification of the S-58T helicopter for	HIDRAULIC EQUIPMENT Role of computerized simulation in the perfecting
instrument flight. I A74-19491	aeronautical equipments or systems applied to hydraulic pump and air intake design
The design application of aircraft securing and traversing systems to the surface effect ship	a74-1681
[AIAA PAPER 74-304] A74-21293 Aircraft/sbip interface problems - The U.S. Havy's program	BYDRAULIC JETS Realization of the power amplification effect in a ramjet unit by applying the principle of
[AIAA PAPER 74-305] A74-21294	boundary layer separation A74-20069
BELICOPTER DESIGN Reliability and choosing number of prototypes in helicopter development program	SYDROCARBON FUELS Composition and chemical stability of motor fuels [AD-770538] 874-1687
A74-20938 HBLICOPTER PERFORMANCE FAA certification of the S-58T helicopter for	HYDROGBN PUBLS Hydrogen - Make-sense fuel for an American
instrument flight. II	supersonic transport [AIAA PAPER 74-163] A74-1935;
A74-19492 Failure of helicopter turbines due to the employment of a steel in a corrodible condition in combination with a design unsuited for the material	BYPERSOUTC FLOW An approximate method for the calculation of the pressure distribution on a wing-cone configuration A74-20046
A74-20498	ł
BELICOPTEE PROPELLER DRIVE Bajor Item Special Study (MISS) AH-16 driveshaft assy, main transmission to engine cost	IGHITION LIBITS Supersonic combustion and burning in ramjet
savings from product improvement in quality and design	combustors [AD-770061] 874-17648
[AD-770498] N74-16746 BELICOPTERS	IL-62 AIRCRAFT Calculation and observance of landing parameters
Equipment for aircraft and helicopter technical servicing Russian book A74-19370	for the aircraft IL-62 and their effect on the safety factor
Urban air traffic and city planning: Case study of	IMPACT RESISTANCE
Los Angeles County Book A74-20624 Studies in low speed flight model helicopter	Effect of adhesive on the impact resistance of laminated plastics for windshield applications [AD-769735] N74-16259
hovering flight test facility [AD-768858] N74-15728 Research on aircraft dynamics for subsonic flight	INCOMPRESSIBLE BOUNDARY LAYER Attachment-line flow on an infinite swept wing
[AD-770540] N74-16738 Report on the Conference on Transparent Aircraft	A74-20293 INDEXES (RATIOS) On the effect of quieter aircraft engines on noise
Enclosures [AD-769372] ¥74-16755	and number index /NNI/ values
Further studies on speech intelligibility with frequency-modulation communication systems under	IMPRIIAL NAVIGATION
fading conditions helicopter-satellite link	Analysis of aided inertial navigation systems performance on international routes
HIGH STRENGTH STEELS	INFIBITE SPAN WINGS
Pailure of helicopter turbines due to the employment of a steel in a corrodible condition	Attachment-line flow on an infinite swept wing A74-20293
in combination with a design unsuited for the material	INFLATABLE STRUCTURES Two dimensional air cushion landing system
HOLOGEAPHIC INTERPEROMETRY	peripheral jet configuration study [AD-769494] N74-15729
In situ non-destructive testing of aircraft structures by holographic interferometry	INPUT/OUTPUT ROUTINES
[RAE-TR-72218] N74-16734 HONEYCOMB COBES	Lockheed S-3A avionics - Transmitting data by multiprocessor computer
Technology of production of sandwich panels with aluminum honeycomb cores	INSPECTION A74-19754
BOVERING A74-20523	An analysis of the phased inspection system for B-52H aircraft analysis of cost reduction by
Studies in low speed flight model helicopter hovering flight test facility	increasing flying hours between inspections [AD-769154] N74-16695
[AD-768658] N74-15728 Drop and static tests on a tenth-scale model of an	INSTRUMENT ERRORS Analysis of aided inertial navigation systems
Air Cushion Landing System (ACLS) [AD-770026] N74-16742	performance on international routes A74-20096
HUMAN FACTORS REGINERRING High acceleration cockpit: The maneuvering	INSTRUMENT PLIGHT RULES FAN certification of the S-58T helicopter for instrument flight. I
countermeasure cockpit design for improved pilot performance [AD-770287] N74-16743	A74-19491 FAA certification of the S-58T helicopter for instrument flight. II
Effect of modified seat angle on air to air weapon system performance under bigh acceleration	INSTRUMENT LANDING SYSTEMS
[AD-770271] N74-16747 HYBRID NAVIGATION SYSTEMS	The national Microwave Landing System A74-19317
Analysis of aided inertial navigation systems performance on international routes	Flight test safety analysis of the all weather landing system /AWLS/ program
HYDBAULIC CONTROL	INTERFERENCE A74-20974
Practical experience with a digital electrohydraulic actuator [NASA-TT-F-15292] N74-15735	The effect of interfering signals on the performance of angle of arrival estimates
2	INTERNATIONAL SYSTEM OF UNITS
•	The impact of conversion to the metric measurement system on aircraft maintenance at base level [AD-769186] W74-15733

INVISCID FLOW		Drop and static tests on a tenth-scale mode	el of an
Flexible lifting surfaces in steady inv	iscid	Air Cushion Landing System (ACLS)	N74-16742
compressible flow	∆74-1968 4	[AD-770026] Study of reverse-flow characteristics of a	tip fan
•		and an ejector for application to all	r
j		cushion landing system [AD-770080]	N74-16744
J+85 EBGIBE		TANDING CRAP	- 4
Hydrogen-methane fuel control systems for t	urbojet	Various mechanisms applied to the Concorde landing gear	main
engines	N74-16493		A74-20548
JET AIRCHAFT		Flight test of the ski equipped Mohawk	174-21820
Collection of problems on airplane piloting	/4th	Two dimensional air cushion landing system	277 27020
revised and enlarged edition/ Russian	A74-19372	peripheral jet configuration study	N74-15729
Flight test safety analysis of the all weat	her .	[AD-769494] Aircraft antiskid analysis verification an	
landing system /AWLS/ program	A74-20974	refinement	
A direct procedure for partitioning scanning		[AD-770300] STOL tactical aircraft investigation-exter	·¥74-16749
workload with a flight director	A74-21336	blown flap. Volume 6: Air cushion land	ing
Airplane nacelle composite structure techno		system trade study	N74-16753
	A74-22102	[AD-770448] LANDING INSTRUMENTS	
Toward the definition of escape and capture regions for a two aircraft pursuit-evasion	n dame	Safety during automatic landing with poor	visibility
considering air to air infrared missi	le .		A74-20422
weapons	N74-17689	LANDING LOADS Calculation and observance of landing para	meters
[AD-770281] JET AIRCRAPT HOISE	114-11003	for the aircraft IL-62 and their effect	on the
Some problems associated with noise attenua	tion at	safety factor	A74-22270
jet engine test facilities	∆74-19629	LATERAL CONTROL	
Simulation studies of an airport noise sile	ncer	P-15 progress report. II with emphasis flight test status and control character	on istics
	174-21641		A/4-19489
JET AMPLIFIERS Realization of the power amplification effe	ct in a	Digital adaptive model following control -	for
ramjet unit by applying the principle of		lateral aircraft dynamics	A74-21338
boundary layer separation	174-20069	LEADING EDGES	
JET ENGINE PORLS		Quasi homogeneous approximations for the	^
Clean, bright, and dry jet engine fuel		calculation of wings with curved subsoni leading edges flying at supersonic speed	s
contamination control	A74-20213	[VTH-173]	N74-16708
Bequirements on the purity of aircraft fuel	Ls 174-20524	LIFT Compressibility effects in unsteady thin-a	1rfoil
JET ENGINES	B14 20324	theory	A74-20298
Trace enectrometric flame analysis and gas		LIFT AUGRENTATION	H74-20236
chromatographic detectors related to jet oil analysis and gas detection	endrue	acoustic characteristics of a large-scale	wind
[AD-769298]	N74-15830	tunnel model of an upper-surface blown f transport having two engines	lap
Some considerations on the performance of	the fan	[NASA-TH-X-62319]	M74-15719
<pre>fet engine (NAL-TR-317)</pre>	N74-16486	TIPPING ROOTES	wiecid
JRT PLAPS	no Hon	Flexible lifting surfaces in steady in compressible flow	1419014
The auquentor wing - Powered-lift STOL a proceed		•	A74-19684
	A74-21728	Subsonic potential aerodynamics for comple configurations - A general theory	e x
Calculation of the longitudinal aerodynamic characteristics of STOL aircraft with	C	Configurations a description	174-20280
externally-blown jet-augmented flaps	4/540	LIGHT AIRCRAFT	
[NASA-CR-2358] STOL tactical aircraft investigation, exte	1974-16719	BD-5 flight test program report	A74-19500
blown flap. Volume 2: Design compendium	n.	The single-engine turboprop in the norther	rn frontier A74-21821
[AD-770110]	N74-16751	LIGHTHING	
JET FLOW A study of the characteristics of measuring	g	proliminary tests of Vulnerability of typ:	ical
elements of pneumonic systems		aircraft electronics to lightning-induc	N74-15720
	A74-19852	[MASA-CR-2350] A test technique for measuring lightning-	induced
Κ .		voltages on aircraft electrical circuit	s N74-16716
• •		[NASA-CR-2348] LIQUEPIED GASES	
KALHAN FILTERS Simplified navigation for unmanned aircraf	t	Hydrogen-methane fuel control systems for	turbojet
	A74-20098	engines [BASA-CR-121247]	N74-16493
•		T.TONID HYDROGKE	
Ļ		Bydrogen - Make-sense fuel for an America supersonic transport	D
LAMINATES Transparent fire resistant polymeric struc	tures	[AIAA PAPER 74-163]	∆7 4-19353
rwscs_csqR+3RC-10913-1]	M /4-16249	LOAD TESTS	c load
make a salarive on the impact resistance	e of	Studies of an elastic wing aerodynami tests	
laminated plastics for windshield applic [AD-769735]	N /4- IDZDY		A74-21781
Report on the Conference on Transparent Al	rcraft	LOGISTICS MANAGEMENT A comparative economic analysis of a	
Enclosuies	N74-16755	lighter-than-air logistics system	
[AD-769372] LANDING AIDS		[AD-769205]	N74-15694
The national Microwave Landing System	A74-19317		

SUBJECT INDEX

LONGITUDINAL STABILITY Longitudinal stability for supersonic transport	The technology and application of free-space power transmission by microwave beam
aircraft	A74-1946
Calculation of the longitudinal aerodynamic Characteristics of STOL aircraft with	The national Microwave Landing System
externally-blown jet-augmented flaps	A74-1931
[NASA-CE-2358] E74-16 LOW SPEED STABILITY	719 The technology and application of free-space power transmission by microwave beam
C-5A/orbiter wind tunnel testing and analysis: Piggyback ferry	A74-19464
[NASA-CR-133484] N74-15	MIDAIR COLLISIONS 717 The automatic aircraft guidance law for mid-air
LOW VISIBILITY Safety during automatic landing with poor visibil	collision avoidance
A74-20	422 MILITARY ATE FACILITIES
IUBRICATING OILS Trace spectrometric flame analysis and gas	Aircraft/ship interface problems - The U.S. Wavy's program
chromatographic detectors related to jet engine oil analysis and gas detection	[AIAA PAPER 74-305] A74-21294 HILITARY AIRCRAFF
[AD-769298] N74-15	
M	[AIAA PAPER 74-300] 374-21200
MACHINE TOOLS	Evaluation of voice recorders for aircraft [AD-770517] N74-16906
The impact of conversion to the metric measuremen- system on aircraft maintenance at base level	HILITARY BELICOPTERS
[AD-769186] W79-15	Helicopter applications at sea 733 A74-19690
MANUAL CONTROL Collection of problems on airplane piloting /4th	Aircraft/ship interface problems - The U.S. Wayy's
revised and enlarged edition/ Russian book	Program [AIAA PAPER 74-305] A74-21294
HABINE PROPULSION	372 HLB Ground Support Equipment (GSE) preliminary investigation
Investigation of the fatigue behavior of large	[AD-7688421 N74-15726
propellers for aircraft carriers [AD-769466] 874-160	Maintainability analysis of major helicopter
HATHBHATICAL MODELS Reliability and choosing number of prototypes	The state of the s
in helicopter development program	[AD-769941] N74-16740 Major Item Special Study (MISS) AH-1G driveshaft
An attempt at describing the steady-state	assy, main transmission to engine cost
performance characteristic of a turbojet engine	savings from product improvement in quality and design
by a formulated relationship A74-217	[AD-770498] H74-16746 184 HISSILE STRUCTURES
Antenna modeling of the KC-135	Advanced composites in aerospace structural
BAXIBUM LIKELIHOOD ESTIMATES	design [AIAA PAPER 74-242] A74-20834
The effect of interfering signals on the performance of angle of arrival estimates	MOROPLANES
MECHANICAL DRIVES	
A photo-electric position-following mechanism	ROLL-plane analysis of on-aircraft antennas
HECHANICAL OSCILLATORS A74-201	λ74-1922B
Investigations into the possibilities of applying	HOMOPULSE BADAR The effects of interference on monopulse performance
the 'Aerodynamic Paradoxon' principle in fluidic devices	characteristics of air traffic control radar
A74-198	beacons 59 [AD-769336] 874-15876
MECHANICAL PROPERTIES Mitinol as a fastener material	ECTION STABILITY
METAL BONDING	
Technology of production of sandwich panels with	[AD-769671] N74-15705 HOVING TARGET INDICATORS
erduring poneacoup cores	Recent advances in air traffic control raders
HETAL PATIGUE	A74-19315
Risk analysis - A program management tool for environmental problems and aircraft metal fatigu	Reliability demonstration testing using
BRTAL MATRIX COMPOSITES A74-209	87 874-20950
Design and fabrication of a boron/aluminum	Simulation studies of an airport noise silencer
Composite wind box test specimen	27u-21641
HETAL PARTICLES	
Survey of trace metals in distillate fuels	N NATURE N
BETALS	17 BACKLES Airplane nacelle composite structure technology
Hot corrosion of metals, alloys and ceramics [AD-769340] N74-158	174-22102
Hydrogen-methane fuel control systems for turbojet	Adaptive systems research in the WASA
endines	WAVIGATION AXDS
[NASA-CB-121247] N74-164 BICROELECTRORICS	93 Parameters of RP flight navigation aids and their
Microelectronic phase shifters in X and Q bands	measurement Russian book a74-19371
BICROVAVE ANTRHVAS	D6 Simplified navigation for unmanned aircraft
Roll-plane analysis of on-aircraft antennas	174-20098
≜74−192 :	28

PLASTIC COATINGS SUBJECT INDEX

CIDICISTAT TYCRARSUNSC		Report on the Conference on Transparent Ai	rcraft
MAVIGATION INSTRUMENTS Beliability of aircraft navigation computes	rs	Enclosures	
Russian book	- -	[AD-769372]	¥74-16755
	A74-20905	OSCILLATING PLOW	11e
IAVY	_	Unsteady viscous flow on oscillating airfo [AIAA PAPER 74-182]	A74-20774
Conceptual options for future aircraft-shi operations	Ρ	A nonlinear relay model for post stall osc	illations
[AIAA PAPER 74-300]	A74-21290	f ap-7694051	M/4-15/06
Aircraft/ship interface problems - The U.S	. Navy's	Numerical calculations of velocity and pre	ssure
program	A74-21294	distribution around oscillating airfoils [NASA-CB-2368]	#74-16704
[AIAA PAPER 74-305] BITIBOL ALLOYS	H74-21234	OV-1 AIRCRAFT	
Nitinol as a fastener material	•	Flight test of the ski equipped Mohawk	270 24020
	A74-20208	ATTN: #70#	174-21820
BOISE GENERATORS A prediction model for wake related sound		OXIDATION Hot corrosion of metals, alloys and cerami	cs
deneration by single airfoils and subson	ic rotors	[AD-769340]	N74-15829
descript of product different and annual	N74-15700	OZONE	
BOISE INTENSITY	_	Atmospheric ozone - Possible impact on stratospheric aviation	
Statistical analysis of aircraft noise lev	eis 174-19638	Stiatospheric aviation	A74-20039
Reduction of aircraft noise in the vicinit		Possible effects of a fleet of supersonic	
airports	,	transports on the stratospheric ozone sh	ield
[NASA-TI-F-15237]	N74-15 71 8		A74-20125
NOISE REDUCTION		D.	
Noise problems in airport design and in ci aircraft operation	V11	P	
all clair obergrion	A74-19476	PACKAGING	
Future advanced-technology aircraft in the	context	Evaluation and redesign of PAA altimeter p	N74-16164
of an integrated transport system		[AD-769540] PANELS	874-10104
Some problems associated with noise attenu	A74-19487	Technology of production of sandwich panel	s with
jet engine test facilities		aluminum honeycomb cores	
·	A74-19629		A74-20523
Reduction of noise from small turbopropuls	ion	PASSENGER AIRCRAFT A study to determine the feasibility of a	low
engines	A74-20760	sonic boom supersonic transport	20-
[AIAA PAPER 74-59] Noise suppressing devices Russian book		[NASA-CR-2332]	N74-15713
•	a74-20904	PERFORMANCE PREDICTION	4 a la a a ##
Simulation studies of an airport noise sil	encer	Computer programs for estimating aircraft	takeoii
a -tua- to a-tonning the amplicability of	174-21641	and landing performance applied to conventional, vectored lift, and powered	l-lift
A study to determine the applicability of abatement approach procedures to McDonne	11	concept aircraft	-
Douglas Aircraft		[N74-16720
[NASA-CR-114677]	N74-15714	PERFORMANCE TESTS	ion
Reduction of aircraft noise in the vicinit	TO V	S-3A initial operational test and evaluati	A74-19496
airports {WASA-TT-F-15237}	N74-15718	Some considerations on the performance of	
rlight evaluation of two segment approache		jet engine	
jet transport noise abatement		(NAL-TR-317)	874-16486
[MASA - CR - 114735]	N74-16995	PHASE SHIFT Microelectronic phase shifters in X and Q	bands
NONDESTRUCTIVE TESTS In situ non-destructive testing of aircraf	t:	[BLL-PO-2988-(9022.81)]	N74-15906
structures by holographic interferometry	7	PHASE TRANSFORMATIONS	
[RAE-TR-72218]	N74-16734	Nitinol as a fastener material	A74-20208
HUCLBAR PROPELLED AIRCRAFT		PHOTOBLASTIC ANALYSIS	A74-20200
The airship can meet the energy challenge	A74-20166	Photoelastic analysis of the stress field	
NUMERICAL ANALYSIS		surrounding a fatique crack	
Numerical solution of the problem of super	sonic		A74-19259
gas flow over the upper surface of a del	ita wing	PHOTOTRANSISTORS A photo-electric position-following mechan	na-i-sm
in the expansion region	A74-22283	# photo-electric posteron-rottowing mechan	A74-20129
HUMERICAL CONTROL		PIGGYBACK SYSTEMS	
Digital adaptive flight controller develop	ment	C-Sa/orbiter wind tunnel testing and analy	ysis:
,	A74-20120	Piggyback ferry	N74-15717
		[NASA-CR-133484] PILOT PERFORMANCE	11/4-15/11
O		A direct procedure for partitioning scann	ing
OBLIQUE SHOCK WAVES		workload with a flight director	
Flowfield analysis for successive oblique	sbock	671-14 took mothed for deter	A74-21336
wave-turbulent boundary-layer interaction	ons A74-19777	A simplified flight-test method for determ aircraft takeoff performance that inclu-	
OPERATIONAL PROBLEMS	B14 13177	effects of pilot technique	
Zeppelins - Not again airship operation	onal	[NASA-TN-D-7603]	N74-16717
bazards		High acceleration cockpit: The maneuvering	ng maro nod
me a statement on over the flight dealer of	∆74-20167 f	countermeasure cockpit design for in pilot performance	mbrosed
Wind modification over the flight decks of high-speed ships	L	[AD-770287]	N74-16743
(AIAA PAPER 74-301)	A74-21291	PIPE PLOW	
ARRELMIANC DESCRIPCH		Turbulent flow in flexible pipes and ramp	
Conceptual options for future aircraft-sai	L P	[JPRS-60785] PLASTIC COATINGS	N74-15962
operations [AIAA PAPER 74-300]	A74-21290	Effect of polymer coatings on fatigue str	ength of
OBSTANT ANADERTIES		aluminum alloy 2024 box beams	
Confirmed OR Transparent Aircraft Enclose	res	[NASA-CE-114699]	N74-16250
devalance and design concepts for vision	ion areas		
of crew enclosures	N74-15727		
[AD-769344]			

PMEUHATIC COMTROL A study of the characteristics of measuring	PUMPS Role of computerized simulation in the perfecting
elements of pneumonic systems A74-19852	aeronautical equipments or systems applied to bydraulic pump and air intake design
A new pneumatic hybrid control system for reduction of supply air consumption	PURSUIT TRACKING N74-16811
A74-19884 POLYMBBIC PILMS Effect of polymer coatings on fatigue strength of	Toward the definition of escape and capture regions for a two aircraft pursuit-evasion game considering air to air infrared missile
aluminum alloy 2024 box beams [BASA-CR-114699] R74-16250	weapons (AD-770281) Was a long to all infrared missile
POSITION (LOCATION) A photo-electric position-following mechanism	0
POSITION INDICATORS A74-20129	QUALITY CONTROL
A study of the characteristics of measuring slements of pneumonic systems	Clean, bright, and dry jet engine fuel contamination control
POTENTIAL FLOW	B74-20213
Subsonic potential aerodynauics for complex configurations - A general theory	Requirements on the purity of aircraft fuels
POWER SPECTER	Reliability demonstration testing using failure-free trials
The influence of non-linear longitudinal aerodynamic characteristics on the power	A74-20950 DC-10 avionics parts reliability in review A74-20969
spectral response of aircraft to atmospheric	Major Item Special Study (MISS) AH-1G driveshaft
turbulence A74-21105	assy, main transmission to engine cost
PRESSURE DISTRIBUTION	savings from product improvement in quality and design
Analysis of axisymmetric turbulence relevant to fet noise	[AD-770498] W74-16746
A74-19631	QUIET ENGINE PROGRAM On the effect of quieter aircraft engines on noise
An approximate method for the calculation of the pressure distribution on a wing-cone configuration	and number index /NNI/ values
A74-20046 Funerical calculations of velocity and pressure	<u>_</u>
distribution around oscillating airfoils	R
[MASA-CR-2368] N74-16704 Measurement of pressure on an oscillating aileron	RADAR BEACORS The effects of interference on monopulse performance
in transonic flow under plane-parallel flow conditions	characteristics of air traffic control radar beacons
[AD-769982] H74-16739 PROBABILITY THEORY	[AD-769336] N74-15876 RADAR EQUIPMENT
The development and evaluation of weight-estimation formulas for aircraft design with the sid of nethods for the side of the s	Applications of surface wave devices in radar, ATC and communications
with the aid of methods of mathematical statistics and probability calculus German book	A74-19388 A look at the British ATC scene. II primary and secondary radar systems development
PROCURENBUT NAMAGENEUT	A74-19727
Equipment procured reliability and real-life	ELDAR FILTERS Recent advances in air traffic control radars
survival avionics producer-military user communications improvement	BADAB RESOLUTION
A74-20954 PRODUCT DEVELOPMENT Technological change through product improvement	Recent advances in air traffic control radars
in aircraft turbine engines [AD-769911] N74-17519	RADIO CONTROL Lockheed S-3A avionics - Tactical voice and data
PROJECT MANAGEMENT	communication A74-19753
Bisk analysis * A program management tool for environmental problems and aircraft metal fatigue	RADIO FREQUENCY INTERPERENCE
PROPELLERS	Advanced tracking and data relay experiments study: Multimode transponder experiment equipment
Investigation of the fatigue behavior of large propellers for aircraft carriers	[MASA-CR-132930] N74-16887 RADIO MAVIGATION Parameters of RF flight pavigation aids and their
[AD-769466] N74-16603 PROPULSION SYSTEM CONFIGURATIONS	measurement Bussian book 174-19371
The Dolphin airship with undulating propulsion system - A new form of the evaluation factor	RANJET ENGINES
A74-22272	Realization of the power amplification effect in a ramjet unit by applying the principle of
PROPULSION SYSTEM PERFORMANCE Aerodynamic problems of turbojet propulsion	boundary layer separation A74-20069
systems, repercussions on das turbine development A74-20313	Turbulent flow in flexible pipes and ramjet engines [JPRS-60785] N74-15962
PROPULSIVE REFFICIBNCY Energy problems in air transportation options	RANDON LOADS
for demand reduction, efficiency increase and fuel alternatives	Determination of critical nondimensional parameters in aircraft dynamic response to random input
The Dolphin airship with undulating propulsion	[NASA-CE-2361] H74-16322 REATTACHED FLOW
system - A new form of the evaluation factor A74-22272	Calculation of the displacement effect in two-dimensional subsonic attached flow around
PROTOTIPES	aerofoils. Examples of calculations using
Reliability and choosing number of prototypes in helicopter development program	measured displacement thicknesses [NLR-TR-72116-0] N74-16707
POLSE BADAR	RECEPTION DIVERSITY
Recent advances in air traffic control radars	Correlational ground speed meters and drift indicators of flight vehicles Russian book
A74-19315	A74-20900

BECOBEAISSANCE AIRCBAFT		RETRACTABLE BOUIPHENT	паіл
Reduction of noise from small turbopropulsi	on	Various mechanisms applied to the Concorde landing gear	pur.
engines [AIAA PAPER 74-59]	A74-20760	Industry year	A74-20548
RECORDING INSTRUMENTS	277 20.00	REVISIONS An investigation of cost factors relating	to class
(20 110311)	N74-16906	4 aircraft modifications [AD-769195]	¥74-15730
RECTABGULAR WINGS	iccid	DOTADY BIYCS	
<pre>Flexible lifting surfaces in steady inv compressible flow</pre>	15C10 174-19684	A prediction model for wake related sound generation by single airfoils and subson	ic rotors
Subsonic potential aerodynamics for complex			N74-15700
configurations - A general theory	A74-20280	Helicopter blade-tip stability in forward	flight N74-16711
BEFRRENCE ATMOSPHERES	A/4 20200	ROTATING SHAFTS	
Tables for flight tests giving reference atmospheres, calibration velocity, mach n	e umber.	A photo-electric position-following mechan	150 174-20129
and sound velocity	พ74-15722	ROTOR AERODYNAMICS Helicopter blade-tip stability in forward	flight
REINFORCED PLASTICS A fatigue failure criterion for fiber reinf	orced	Research on aircraft dynamics for subsomic	N74-16711 fliqht N74-16738
materials	A74-20478	BOTOBS	
Effect of adhesive on the impact resistance		Application of the collision-imparted welo	city
laminated plastics for windshield applica	tions	method for analyzing the responses of	
[AD-769735]	N74-16259	containment and deflector structures to	engine
RRINPORCING PIBERS		rotor fragment impact	N74-16592
A fatigue failure criterion for fiber reinf materials	orced	(NASA-CB-134494)	2.1 .0052
•	A74-20478	S	
Advanced composites in aerospace struct	ural	CAN RELEPING	
design [AIAA PAFER 74-242]	A74-20834	A fatique failure criterion for fiber rein	forced
Design and fabrication of a boron/aluminum		materials	A74-20478
composite wing box test specimen		- 1	A14-20410
Į DD 110203 j	N74-16741	S-3 AIRCHAFT S-3A initial operational test and evaluati	.on
RELIABILITY ANALYSIS Reliability of adaptive systems Russian	book	2-34 INICIGI OPERATORES TOTAL	A74-19496
on flight control	. 2001	S-58 HELICOPTER	.
	A74-20919	FAA certification of the S-58T helicopter	ior
Reliability demonstration testing using		instrument flight. I	A74-19491
failure-free trials	A74-20950	FAM certification of the S-58T helicopter	for
Simulation of dispatch reliability for a fl		instrument flight. II	
large commercial aircraft		AT 1700015E	A74-19492
	A74-20952	SAAB 37 AIRCRAFT SAAB digital flight control for Vigger	aircraft
Equipment procured reliability and real-life	re Leor	[AIAA PAPER 74-26]	A74-20754
survival avionics producer-military to communications improvement	1861	SANDWICH STRUCTURES	
	A74-20954	Technology of production of sandwich panel	s with
Major Item Special Study (MISS) AH-16 drive	eshaft	aluminum honeycomb cores	A74-20523
assy, main transmission to engine cos savings from product improvement in qual	St Itw and	SATELLITE TRANSMISSION	
gesign stone broader inhtosement in degra	LLY UNG	Some transmission characteristics of APROS	MT-type
[AD-770498]	N74-16746	air traffic control systems	A74-19957
RELIABILITY ENGINEERING			A/4-1993/
Beliability of aircraft navigation computer	cs	SCANNING A direct procedure for partitioning scanni	ing
Russian book	A74-20905	workload with a flight director	
Reliability and choosing number of prototy		· •	A74-21336
in helicopter development program		SE-3160 HELICOPTER	LAA TTY
	A74-20938	Helicopter windlass rescue with the Aloue	A74-21705
maintainability analysis of major helicopte components analysis of man-hour cost	er F for	SEATS	
naintaining military helicopters	3 101	Rffect of modified seat angle on air to ai	ir weapon
[AD-769941]	N74-16740	system performance under high acceleration	ion
RESCUE OPERATIONS		FAD-770271]	N74-16747
Helicopter applications at sea	A74-19690	SECONDARY RADAR The reduction of garbling in secondary	
Helicopter windlass rescue with the Alouet		surveillance radar	
-	A74-21705		A74-19391
An investigation of airborne displays and	controls	A look at the British ATC scene. II prand secondary radar systems development	CTMUTA
for Search And Rescue (SAR). Volume 9:	Project	SUG SECONDARY LANGE SISTEMS GENETOPHENE	A74-19727
Sea Scanner avionics and sensor system	N74-16754	SEPARATED FLOW	
CAD-770548 T RESEARCH AIRCEAFT		Analysis of the flow about delta wings wi	th
amon monoprob facilities summary 1974 ***	wind	leading edge separation at supersonic s	peeds 1174-15704
*unnals shock tubes, ballistic ranges,	tlight	[NASA-CR-132358]	B/4-15/04
simulators, research aircraft, and compu	ters N74-15939	SERVICE LIFE Aircraft life cycle profitability - The	
[NASA-TH-X-69411]	114-13333	nanufacturer's challenge	
HESEABCE PROJECTS Advanced subsonic long-haul transport term	inal	[AIAA PAPER 74-280]	A74-20836
area compatibility study. Volume 1:		Aircraft life cycle profitability - The o	perator's
Compatibility assessment	W78-16700	challenge [AIAA PAPER 74-281]	A74-20837
(BASA-CB-132367) Advanced subsonic long-haul transport term	N74-16729 inal	Equipment procured reliability and real-1	
area compatibility study. Volume 2: Re	search	survival avionics producer-military	user
and technology recommendations		communications improvement	A74-20954
- n- 1273601	M74-16730		A14-40334

SHOCK TUBES SUBJECT INDEX

SHOCK TUBES	SOUND WAVES
Ames research facilities summary 1974 wind	Component performance and systems applications of
tunnels, shock tubes, ballistic ranges, flight	surface acoustic wave devices: Proceedings of
simulators, research aircraft, and computers	the International Specialist Seminar, Avienore,
[NASA-TM-X-69411] N74-1593	
SHOCK WAVE ATTENUATION An experimental study of attenuation of shock	174-1937
waves in aircraft fuel tanks	Applications of surface wave devices in radar,
[AD-769530] N74-1675	ATC and communications
SHOCK WAVE INTERACTION	A74-1938 Problems in civil air traffic control which SAW
Flowfield analysis for successive oblique shock	technology may impact Surface Acoustic Wave
wave-turbulent boundary-layer interactions	devices
174-1977	
SHOCK WAVE PROFILES	SPACE COMMUNICATION
Calculation of supersonic flow past conical bodies	Engineering aspects with satellite communication
A74-1993	terminals in aircraft
SHORT HAUL AIRCRAFT	[REPT-7-72] N74-15842
The HS.146 - A four-jet feeder-liner	SPACE SHUTTLE ORBITERS
. A74-2172	C-5A/orbiter wind tunnel testing and analysis:
SHORT TAKBOFF AIBCRAFT	Piggyback ferry
The augmentor wing - Powered-lift STOL a proven	[NASA-CR-133484] N74-15717
concept	SPACECRAFT COMMUNICATION
A74-21729	
Pixed-base simulation study of decoupled controls	frequency-modulation communication systems under
during approach and landing of a STOL transport airplane	fading conditions helicopter-satellite link
[NASA-TH-D-7363] H74-1570	[REPT-5-73] N74-16903 SPACECRAFT CONTROL
Design of a powered elevator control system	
powered elevator system for modified C-8A	Flight vehicle control systems Russian book
aircraft for STOL operation	SPACECRAFT STRUCTURES
[NASA-CR-114727] N74-1571	
Study of quiet turbofan STOL aircraft for	[ESRO-CR(P) -322] 874-16597
short-haul transportation. Volume 1: Summary	SPEECH RECOGNITION
[NASA-CR-2353] N74-16718	
Calculation of the longitudinal aerodynamic	frequency-modulation communication systems under
characteristics of STOL aircraft with	fading conditions helicopter-satellite link
erternally-blown jet-auquented flaps	[REPT-5-73] N74-16903
[NASA-CR-2358] N74-16719	SPEED INDICATORS
STOL tactical aircraft investigation, externally	Correlational ground speed meters and drift
blown flap. Volume 2: Design compendium [AD-770110] N74-1675	indicators of flight vehicles Russian book
(AD-770110) N74-1675' STOL tactical aircraft investigation-externally	
blown flap. Volume 5: Flight control	STABILITY DERIVATIVES
technology. Part 2: Simulation studies/flight	Aerodynamic analysis of various flight conditions
control system validation	of conventional aircraft. IX - Aerodynamic
	foundations (Conoral Survey)
	foundations /General Survey/
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally	A74-22273
fAD-770449 1 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing	STABLE OSCILLATIONS A74-22273
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study	A74-22273 STABLE OSCILLATIONS Investigations into the possibilities of applying
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] 874-1675	A74-22273 STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] N74-16753 X-22A fired-base ground simulator facility	A74-22273 STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] 874-16753 X-22A fixed-base ground simulator facility [AD-769942] 876-16993	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] P74-16753 Y-22A fixed-base ground simulator facility [AD-769942] P74-16993 SIGNAL DISTORTION	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] Y-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of garbling in secondary	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] X-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices STABDARDS Explanations and remarks on standards for flight mechanics A74-20522
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] P74-16753 Y-22A fixed-base ground simulator facility [AD-769942] B74-16997 SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar A74-19391	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] V-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of garbling in secondary surveillance radar A74-19391 SIGNAL ENCODING	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] X-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] V-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of garbling in secondary surveillance radar A74-19391 SIGNAL ENCODING	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] V-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of garbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links A74-19392 SIGNAL FADING	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901 (WR/D)]
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] N74-16753 I-22A fired-base ground simulator facility [AD-769342] STORMAL DISTORTION The reduction of garbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TN-901 (WR/D)] STATISTICAL AMALYSIS
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] V-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTOR The reduction of garbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TM-901 (WR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] S74-16752 [AD-770448] F74-16753 S122A fired-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Futher studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73]	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901 (WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels A74-19638
[AD-770449] N74-16752 STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] N74-16753 I-22A fired-base ground simulator facility [AD-769942] N74-16993 SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar A74-19391 SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] N74-16903	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TM-901 (WR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTOR The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901(WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6; Air cushion landing system trade study [AD-770448] N74-16752 N-22A fired-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar N74-19396 SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link (REPT-5-73) SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices: Proceedings of	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TN-901 (PR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] Y-22A fixed-base ground simulator facility [AD-769542] SIGNAL DISTORTION The reduction of garbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Avignore.	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901(WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT4-16753 INT4-16754 INT4-167593 INT4-1675942] SIGHAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGHAL ENCODING Bigh integrity ATC data links SIGHAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGHAL PHOCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901 (WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] Y-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901 (PR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of
[AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fixed-base ground simulator facility [AD-769542] SIGNAL DISTORTION The reduction of garbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILARITY TEEOREM	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TN-901 (WR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901 (WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-2049 Simulation of dispatch reliability for a fleet of large commercial aircraft
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING COmponent performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILARITY THEORES An attempt at describing the steady-state performance characteristic of a turbofet engine	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TN-901 (RR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STEADY FLOW
STOL tactical aircraft investigation-externally blown flap. Volume 6; Air cushion landing system trade study [AD-770448] B74-1675; Y-22A fired-base ground simulator facility [AD-769942] B74-1699; SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar A74-1939; SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link (REPT-5-73) N74-1690; SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TN-901(WR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STRADY FLOW Flexible lifting surfaces in steady inviscid
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] B74-1675: X-22A fired-base ground simulator facility [AD-769942] B74-1699: SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar A74-1939: SIGNAL ENCODING High integrity ATC data links A74-1939: SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Avienore, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901 (WR/D)] STATISTICAL AHALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STRADY FLOW Flexible lifting surfaces in steady inviscid compressible flow
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901 (PR/D)] STATISTICAL AHALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft STEADI FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-19684
AD-770449] STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILABITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Plight test of the ski equipped Mohawk	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TN-901 (WR/D)] STATISTICAL AHALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft A74-20952 STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow STEADY STATE
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] N74-1675: N74-1699: N74-1699: N74-1699: N74-1699: N74-1699: N74-1699: N74-1699: N74-1699: N74-1939: N74-1820: N74-1939: N74-1820: N74-1939: N74-1820: N74-1939: N74-1820: N74-1939: N74-1939: N74-1939: N74-1939: N74-1939: N74-1939: N74-	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901 (WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STRADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-19684 STEADI STATE An attempt at describing the steady-state
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] Ind-770448] Ind-770448] Ind-770448] Ind-770542] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link (REPT-5-73) SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIDS COMPOUNDS Hot corrosion of metals, alloys and ceramics	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901 (RR/D)] STATISTICAL AHALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-19684 STEADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT4-16752 INT4-16753 INT4-16997 SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 A74-19376 SIMILABITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Plight test of the ski equipped Mohawk SODIUM COMPONDS Bot corrosion of metals, alloys and ceramics [AD-769340]	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WRE-TM-901 (WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STRADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-20952 STRADI STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INTERMEDIAN [AD-770448] INTERMEDIAN [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avienore, Scotland, September 25-28, 1973 SIMILABITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUM COMPOUNDS Hot corrosion of metals, alloys and ceramics [AD-769340] N74-15829	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901 (RR/D)] STATISTICAL AHALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-20952 STEADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of garbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Avienore, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUS COMPOUNDS Hot corrosion of metals, alloys and ceramics [AD-769340] SONAR The effect of interfering signals on the	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TM-901 (WF/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-20952 STEADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship A74-21784 STEAN TURBINES Selection of the economically optimal blade
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fired-base ground simulator facility [AD-769942] SIGNAL DISTORM The reduction of garbling in secondary surveillance radar SIGNAL ENCODING Bigh integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avienore, Scotland, September 25-28, 1973 SIMILABITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUM COMPONEDS Hot corrosion of metals, alloys and ceramics [AD-769340] SONAR The effect of interfering signals on the performance of angle of arrival estimates	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901(WR/D)] STATISTICAL ANALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STRADY FLOW Plexible lifting surfaces in steady inviscid compressible flow A74-20952 STRADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship STRAD TURBINSS Selection of the economically optimal blade profile for axial fluid flow engines
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] I-22A fixed-base ground simulator facility [AD-769942] SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUM COMPOUNDS Rot corrosion of metals, alloys and ceramics [AD-769340] N74-15829 The effect of interfering signals on the performance of angle of arrival estimates	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901(NR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft A74-20952 STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-19684 STEADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship STEADY TURBINES Selection of the economically optimal blade profile for axial fluid flow engines
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT4-16752 INT4-16753 INT4-16993 SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING Bigh integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avienore, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUM COMPONDES Hot corrosion of metals, alloys and ceramics [AD-769340] N74-15829 The effect of interfering signals on the performance of angle of arrival estimates SONIC BOOMS	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TM-901 (WF/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft A74-20952 STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-20952 STEADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship STEAD TURBINES Selection of the economically optimal blade profile for axial fluid flow engines A74-20311
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT4-16752 INT4-16753 INT4-16997 SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING High integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PHOCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avience, Scotland, September 25-28, 1973 SIMILABITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUS CONFORNS Hot corrosion of metals, alloys and ceramics [AD-769340] SONAE The effect of interfering signals on the performance of angle of arrival estimates A74-19908 A 8tudy to determine the feasibility of a low	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [VRE-TM-901 (WR/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book Simulation of dispatch reliability for a fleet of large commercial aircraft STRADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-20952 STRADI STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship A74-21784 STRAD STRAD TURBINS Selection of the economically optimal blade profile for axial fluid flow engines A74-20311 STRATOSPHERE Atmospheric ozone - Possible impact on
STOL tactical aircraft investigation-externally blown flap. Volume 6: Air cushion landing system trade study [AD-770448] INT4-16752 INT4-16753 INT4-16993 SIGNAL DISTORTION The reduction of qarbling in secondary surveillance radar SIGNAL ENCODING Bigh integrity ATC data links SIGNAL FADING Further studies on speech intelligibility with frequency-modulation communication systems under fading conditions helicopter-satellite link [REPT-5-73] SIGNAL PROCESSING Component performance and systems applications of surface accustic wave devices; Proceedings of the International Specialist Seminar, Avienore, Scotland, September 25-28, 1973 SIMILARITY THEOREM An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship SKIS Flight test of the ski equipped Mohawk SODIUM COMPONDES Hot corrosion of metals, alloys and ceramics [AD-769340] N74-15829 The effect of interfering signals on the performance of angle of arrival estimates SONIC BOOMS	STABLE OSCILLATIONS Investigations into the possibilities of applying the 'Aerodynamic Paradoxon' principle in fluidic devices A74-19859 STANDARDS Explanations and remarks on standards for flight mechanics A74-20522 STATIC AERODYNAMIC CHARACTERISTICS Description of six degree of freedom rigid aircraft mathematical models numerical analysis of flight dynamics of high speed aircraft [WEE-TM-901 (WF/D)] STATISTICAL AMALYSIS Statistical analysis of aircraft noise levels A74-19638 The development and evaluation of weight-estimation formulas for aircraft design with the aid of methods of mathematical statistics and probability calculus German book A74-20049 Simulation of dispatch reliability for a fleet of large commercial aircraft A74-20952 STEADY FLOW Flexible lifting surfaces in steady inviscid compressible flow A74-20952 STEADY STATE An attempt at describing the steady-state performance characteristic of a turbojet engine by a formulated relationship STEAD TURBINES Selection of the economically optimal blade profile for axial fluid flow engines A74-20311

SUBJECT INDEX SYSTEM EPPECTIVENESS

Possible effects of a fleet of supersonic	SUPERSONIC COMBUSTION
transports on the stratospheric ozone shield	Plow of hydrogen-oxygen mixtures around blunted bodies moving at high velocity
STRESS CONCERTRATION	∆74-22304
Photoelastic analysis of the stress field	Supersonic combustion and burning in ramjet
surrounding a fatique crack	combustors
A74-19259	[AD-770061] BY4-1/648 SUPERSONIC COMBUSTION RANJET ENGINES
STRESS CORROSION CRACKING Pailure of helicopter turbines due to the	Supersonic combustion and burning in ranjet
employment of a steel in a corrodible condition	combustors
in combination with a design unsuited for the	[AD-770061] B74-17648
material	SUPERSORIC FLOW Flowfield analysis for successive oblique shock
A74-20498	wave-turbulent boundary-layer interactions
STRUCTURAL AWALYSIS Studies of an elastic wing aerodynamic load	A74-19777
tests	Calculation of supersonic flow past conical bodies 174-19935
A74-21781	Numerical solution of the problem of supersonic
STRUCTURAL DESIGN CRITERIA A fatique failure criterion for fiber reinforced	gas flow over the upper surface of a delta wing
materials	in the expansion region
A74-20478	A74-22283
Plan for developing structural criteria for	SUPERSORIC JET FLOW Realization of the power amplification effect in a
composite airframes	ramjet unit by applying the principle of
Design guide for the use of structural shapes in	boundary layer separation
aircraft applications. Part 1: Selection criteria for structural shapes and tubing. Part	A74-20069
criteria for structural shapes and tubing. Part	Collection of experimental data for aircraft afterbody drag in the transonic and supersonic
2: Manufacturing methods for structural shapes	range and comparison with theoretical
and tubing [AD-769042] N74-15723	calculation methods
STRUCTURAL PAILURE	[BMVG-FBWT-73-27] N74-16705
Risk analysis - A program management tool for	SUPERSORIC SPREDS Ouasi homogeneous approximations for the
environmental problems and aircraft metal fatigue A74-20987	calculation of wings with curved subsonic
Column failure of thin-walled compression nembers	leading edges flying at supersonic speeds
in aircraft wings as affected by wall	[VTH-173] N74-16708
imperfection and crushing	SUPERSORIC TEAMSPORTS Hydrogen - Make-sense fuel for an American
(VTH-175) N74-16737 STBUCTURAL VIBRATION	supersonic transport
Dynamic stability of sweptback aircraft wings	[AIAA PAPER 74-163] A74-19353
under the action of variable aerodynamic forces	Atmospheric ozone - Possible impact on
A74-22225	stratospheric aviation A74-20039
STRUCTURAL WRIGHT The development and evaluation of	Possible effects of a fleet of supersonic
weight-estimation formulas for aircraft design	transports on the stratospheric ozone shield
with the aid of methods of mathematical	Δ74-20125
statistics and probability calculus German	A study to determine the feasibility of a low sonic boom supersonic transport
book . A74-20049	[NASA-CR-2332] N74-15713
SUBSONIC FLOW	SURFACE WAVES
Subscnic potential aerodynamics for complex	Component performance and systems applications of surface acoustic wave devices; Proceedings of
configurations - A general theory A74-20280	the International Specialist Seminar, Avienore,
Compressibility effects in unsteady thin-airfoil	Scotland, September 25-28, 1973
theory	A74-19376
174-20298	Applications of surface wave devices in radar, ATC and communications
The high subsonic flow around a two-dimensional aerofoil with a trailing edge control surface	A74-19388
174-21104	Problems in civil air traffic control which SAW
Calculation of the displacement effect in	technology may impact Surface Acoustic Wave
two-dimensional subsonic attached flow around	devices A74~19390
aerofoils. Examples of calculations using measured displacement thicknesses	SURVEILLANCE
[NLH-TH-72116-U] N74-16707	The effect of interfering signals on the
CHECKET CHECK	performance of angle of arrival estimates A74-19908
Research on aircraft dynamics for subsonic flight	SURVEILLANCE RADAR
[AD-770540] M/4-16/38 SUBSONIC WIND TUNNELS	The reduction of garbling in secondary
A method for measuring the dynamic stability Cyr	surveillance radar
in a subsonic wind tunnel	174-19391
(REPT-1427) N74-15701	SURPT WINGS Attachment-line flow on an infinite swept wing
SOLPATES Hot corrosion of metals, alloys and ceramics	174-20293
[AD-769340] - N74-15829	SHEPTBACK WINGS
SUPERCAVITATING PLOW	Dynamic stability of sweptback aircraft wings
The state of development of axial pumps with	under the action of variable aerodynamic forces A74-2222
supercavitating cascades	SYNCHROBOUS SATELLITES
CHOPPOTCH PRODRECIES	Some transmission characteristics of AFROSAT-type
Microelectronic phase shifters in X and Q bands	air traffic control systems
[BLL-PO-2988- (9022.81)] W/4-15906	SYSTEM REFERCTIVENESS
SUPERSONIC AIRCRAFT Description of six degree of freedom rigid	Some experiences from the use of an LCC approach
-4-cmost mathematical models numerical	Life Cycle Cost for weapon systems acquisition
analysis of flight dynamics of high speed aircraft	174-2094
CVD = AN - 901 (NR / DL T N74-15702	

SYSTEMS APALISIS SUBJECT INDEX

	TECHNOLOGY UTILIZATION
An analysis of the phased inspection system for	Component performance and systems applications of
B-52H aircraft analysis of cost reduction by increasing flying hours between inspections	surface acoustic wave devices: Proceedings of the International Specialist Seminar, Aviemore,
[AD-769154] R74-16695	Scotland, September 25-28, 1973
SYSTEMS ENGINEERING	A74-19376
Flight vehicle control systems Russian book A74-19374	The technology and application of free-space power
Problems in civil air traffic control which SAW	transmission by microwave beam A74-19464
technology may impact Surface Acoustic Wave	TELEMETRY
devices	Putting the computer in its place Automated
A74-19390 Putting the computer in its place Automated	Telemetry System for aircraft flight tests A74-19497
Telemetry System for aircraft flight tests	TBMPERATURE EFFECTS
A74-19497	Witinol as a fastener material
Lockheed 5-3A avionics - Three system digital flight quidance	TERMINAL FACILITIES A74-20208
A74-19751	Air traffic control scheme through simulation
A new pneumatic hybrid control system for	A74-20663
reduction of supply air consumption A74-19884	Advanced subsonic long-haul transport terminal area compatibility study. Volume 1:
Adaptive systems research in the NASA	Compatibility assessment
a74-20095	[NASA-CR-132367] N74-16729
Realization of a horizontal collision avoidance syste∎	Advanced subsonic long-haul transport terminal
A74-20099	area compatibility study. Volume 2: Research and technology recommendations
The design application of aircraft securing and	[N74-16730
traversing systems to the surface effect ship	TEST PACILITIES
[AIAA PAPER 74-304] A74-21293	The case for engine flying test beds for aircraft
T	A74-19499
TAKBOPP	Some problems associated with noise attenuation at
A simplified flight-test method for determining	jet engine test facilities
aircraft takeoff performance that includes	A74-19629 Studies in low speed flight model helicopter
effects of pilot technique	hovering flight test facility
[HASA-TN+D-7603] H74~16717 TAKBOPP ROBS	[AD-768858] N74-15728
Art of the Stretch 8. I DC 8-63 flight	<pre>I-22A fixed-base ground simulator facility [AD-769942] #74-16997</pre>
instruments, takeoff performance, minimum	THERMODYNAMIC CYCLES
control speed	Some considerations on the performance of the fan
A74-20274 VITAL II Virtual Image Takeoff and Landing	jet engine [NAL-TR-317] N74-16486
system in Boeing 727 flight simulator	[NAL-TR-317] N74-16486 THIM AIRFOILS
MARCHE DECOCATATOR	Compressibility effects in unsteady thin-airfoil
TABGET RECOGNITION The effect of interfering signals on the	theory
performance of angle of arrival estimates	A74-20298
Assistance of andre of affilms extracted	THIN WALLS
A74-19908	THIN VALLS Column failure of thin-walled compression members
TECHNOLOGICAL FORECASTING	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall
A74-19908 TECHHOLOGICAL PORECASTING Problems in civil air traffic control which SAN	THIM WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall inperfection and crushing
TECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall inperfection and crushing [YTH-175] THIN WINGS
PECHHOLOGICAL PORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing (YTH-175) #74-16737 THIM WINGS Column failure of thin-walled compression members
TECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall
PECHEOLOGICAL PORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall inperfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing
PECHECLOGICAL PORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THREE DIMENSIONAL FLOW
Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W14-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical hodies
PECHECLOGICAL PORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YHE-175] H74-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YHH-175] THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies a74-19935
Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA A74-20095 Long range view of materials research for civil	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W14-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical hodies
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system Adaptive systems research in the NASA A74-20095 Long range view of materials research for civil	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall inderfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical hodies a74-19935 THRUST AUGHESTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring
Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA A74-20095 Long range view of materials research for civil transport aircraft	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing (VTH-175) R74-16737 THIW HIRGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing (VTH-175) V74-16737 THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring faD-769495] N74-15726
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Puture advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA A74-20095 Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W14-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA A74-20095 Long range view of materials research for civil transport aircraft A74-20210 Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] A74-21290	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing (VTH-175) R74-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing (VTH-175) V74-16737 THRUE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring (AD-769495) THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing
TECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the MASA A74-20095 Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TECHNOLOGY ASSESSMENT	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W14-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W74-16737 THRUE DIMBNSIONAL FLOW Calculation of supersonic flow past conical bodies THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing A74-19498 The augmentor wing - Powered-lift STOL a proven
Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices; Proceedings of	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall inderfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies a74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THOUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept
Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA A74-20095 Long range view of materials research for civil transport aircraft A74-20210 Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSMENT Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore,	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W14-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W74-16737 THRUE DIMBNSIONAL FLOW Calculation of supersonic flow past conical bodies THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the MASA A74-20095 Long range view of materials research for civil transport aircraft A74-20210 Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TECHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WATH-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WATH-175] THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies a74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring concept
Problems in civil air traffic control which SAW technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSMENT Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W74-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W74-16737 THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies a74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing A74-19498 The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] A74-15726
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the MASA A74-20095 Long range view of materials research for civil transport aircraft A74-20210 Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TECHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices: Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical hodies a74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THE ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSENTY Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 APPLICATIONS A74-19388	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [THE-175]
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the MASA A74-20095 Long range view of materials research for civil transport aircraft A74-20210 Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TECHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices: Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W14-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W74-16737 THRUE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THIT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Model 222 tilt rotor
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft A74-20095 Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAM FAPER 74-300] TRCHNOLOGY ASSESSENTY Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies a74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing A74-19498 The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Model 222 tilt rotor aircraft
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices: Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards A74-20167 The state of development of axial pumps with	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] WT4-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W74-16737 THRUE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale himgeless prop/rotor designed for the Boeing Model 222 tilt rotor aircraft [NASA-CR-114664] TIME DEPENDENCE
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the MASA Long range view of materials research for civil transport aircraft A74-20095 Long range view of materials research for civil transport aircraft A74-20210 Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TECHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards The state of development of axial pumps with supercavitating cascades	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W74-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W74-16737 THREE DIHENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing A74-19498 The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Hodel 222 tilt rotor aircraft [WASA-CR-114664] THE BERENDENCE Statistical analysis of aircraft noise levels
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] THECHNOLOGY ASSESMENT Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards The state of development of axial pumps with supercavitating cascades A74-20325 Advanced composites in aerospace structural	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W74-16737 THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Hodel 222 tilt rotor aircraft [MASA-CR-114664] N74-15711 TIME DEPENDENCE Statistical analysis of aircraft noise levels
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the MASA LONG range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TECHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices: Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards The state of development of axial pumps with supercavitating cascades A74-20325 Advanced composites in aerospace structural design	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WATH-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WATH-16737 THREE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies a74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 The augmentor wing - Powered-lift STOL a proven concept Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Model 222 tilt rotor aircraft [WASA-CE-114664] THE DEPENDENCE Statistical analysis of aircraft noise levels A74-19638 TITANIUM ALLOYS Design quide for the use of structural shapes in
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSENTY Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards The state of development of axial pumps with supercavitating cascades A74-20325 Advanced composites in aerospace structural design [AIAA PAPER 74-2421 ATM-20836	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WAT-16737 THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing A74-19498 The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Hodel 222 tilt rotor aircraft [WASA-CR-114664] TIMB DEPENDENCE Statistical analysis of aircraft noise levels A74-19638 TITANIUM ALLOIS Design quide for the use of structural shapes in aircraft applications. Part 1: Selection
PECHNOLOGICAL FORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification A74-19481 Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSHENT Component performance and systems applications of surface acoustic wave devices: Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards The state of development of axial pumps with supercavitating cascades A74-20325 Advanced composites in aerospace structural design [AIAA PAPER 74-242] Airplane maccelle composite structure technology	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] WT4-16737 THIN WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [VTH-175] W74-16737 THRUE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGMENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 The augmentor wing - Powered-lift STOL a proven concept A74-21728 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale himgeless prop/rotor designed for the Boeing Model 222 tilt rotor aircraft [NASA-CR-114664] TIME DEPENDENCE Statistical analysis of aircraft noise levels A74-19638 TITANIUM ALLOIS Design quide for the use of structural shapes in aircraft applications. Part 1: Selection criteria for structural shapes and tubing. Part
PECHNOLOGICAL PORECASTING Problems in civil air traffic control which SAN technology may impact Surface Acoustic Wave devices A74-19390 Airports evolution and qualification Future advanced-technology aircraft in the context of an integrated transport system A74-19487 Adaptive systems research in the NASA Long range view of materials research for civil transport aircraft Conceptual options for future aircraft-ship operations [AIAA FAPER 74-300] TRCHNOLOGY ASSESSENTY Component performance and systems applications of surface acoustic wave devices; Proceedings of the International Specialist Seminar, Aviemore, Scotland, September 25-28, 1973 Applications of surface wave devices in radar, ATC and communications Zeppelins - Not again airship operational hazards The state of development of axial pumps with supercavitating cascades A74-20325 Advanced composites in aerospace structural design [AIAA PAPER 74-2421 ATM-20836	THIN WALLS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] WINGS Column failure of thin-walled compression members in aircraft wings as affected by wall imperfection and crushing [YTH-175] W74-16737 THERE DIMENSIONAL FLOW Calculation of supersonic flow past conical bodies A74-19935 THRUST AUGHENTATION Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] THRUST VECTOR CONTROL Vectored thrust V/STOL shipboard testing The augmentor wing - Powered-lift STOL a proven concept A74-19498 Analysis of control surface augmentation in high-performance aircraft by thrust vectoring [AD-769495] TILT ROTOR RESEARCH AIRCRAFT PROGRAM V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Hodel 222 tilt rotor aircraft [NASA-CR-114664] N74-15711 TIMB DEPENDENCE Statistical analysis of aircraft noise levels A74-19638 TITANIUM ALLOIS Design quide for the use of structural shapes in aircraft applications. Part 1: Selection

SUBJECT IEDBY URBAN PLANNING

	Technological change through product improvement
TRACE CONTABINANTS	in aircraft turbine engines
Survey of trace metals in distillate fuels 174-20	217 [AD-769911] N74-17519
TRAILING EDGES	TURBOCOMPRESSOES
The high subsonic flow around a two-dimensional	railure of helicopter turbines due to the employment of a steel in a corrodible condition
aerofoil with a trailing edge control surface A74-21	
TRAJECTORY OPTIMIZATION	material A74-20498
The automatic aircraft guidance law for mid-air	TURBOPAN ENGINES
collision avoidance	340 Acoustic characteristics of a large-scale wind
TRANSIENT RESPONSE	tunnel model of an upper-surface blown flap
application of the collision-imparted velocity	transport having two engines [NASA-TM-I-62319] N74-15719
method for analyzing the responses of containment and deflector structures to engine	Some considerations on the performance of the fan
rotor fragment impact	iet engine
[BASA-CE-134494] N74-16	
TRANSISTOR CIRCUITS	TURBOJET ENGINES Aerodynamic problems of turbojet propulsion
A photo-electric position-following mechanism A74-20	129 systems, repercussions on gas turbine development
TRANSMITTED RECEIVERS	a74-20313
Lockheed S-3A avionics - Tactical voice and data	An attempt at describing the steady-state performance characteristic of a turbojet engine
communication A74-19	753 by a formulated relationship
TRANSOCRABIC SYSTEMS	A74-21784
Analysis of aided inertial navigation systems	TURBOPROF AIRCRAPT The single-engine turboprop in the northern frontier
performance on international routes	
TRANSORIC SPEED	STEPADOAD PREINTS
Measurement of pressure on an oscillating aileror	The single-engine turboprop in the northern frontier
in transonic flow under plane-parallel flow	TURBULENCE EFFECTS
conditions [AD-769982] H74-16	739 The influence of non-linear longitudinal
TRANSPONDERS	aerodynamic characteristics on the power
Advanced tracking and data relay experiments	spectral response of aircraft to atmospheric turbulence
study: Multimode transponder experiment equipment study: N74-16	371-21105
[NASA-CR-132930] N/4-TR TRANSPORT AIRCRAFT	TURBULENT BOUNDARY LAYER
Trends in hydraulic systems of commercial	Flowfield analysis for successive oblique shock wave-turbulent boundary-layer interactions
transport aircraft . A74-19	
Long range view of materials research for civil	中代中日で、RV中 PION
transport aircraft	Turbulent flow in flexible pipes and rammet engines
174-20	210 [JPES-60785] N74-15962 TORBULENT JETS
A study to determine the applicability of noise abatement approach procedures to McDonnell	Analysis of axisymmetric turbulence relevant to
Douglas Aircraft	jet noise
[NASA-CR-114677] N74-1	7714 Noise characteristics of a turbulent crosswind jet
Reduction of aircraft noise in the vicinity of	A74-20281
airports [NASA-TT-F-15237] N74-19	5718 TURBULENT WAKES
Study of quiet turbofan STOL aircraft for	Vortexes in aircraft wakes light aircraft
short-haul transportation. Volume 1: Summary	hazards 174-22206
[NASA+CE-2353] N74-1 Advanced subsonic long-haul transport terminal	a prediction model for wake related sound
area compatibility study. Volume 1:	generation by single airfoils and subsonic rotors
Compatibility assessment	
[NASA-CH-132367] N/4-: Advanced subsonic long-baul transport terminal	attenuation of trailing vortices based on model
area compatibility study. Volume 2: Research	tests in a large towing basin
and technology recommendations	[NASA-CR-2202] 874-15710 Acoustic scattering from an aircraft trailing vortex
(NASA-CR-132368) N74-1	
Drop and static tests on a tenth-scale wodel of Air Cushion Landing System (ACLS)	INC DIBERSIONER DODIES
f an - 770026 3 N74-1	
STOL tactical aircraft investigation, externally	aerofoil with a trailing edge control surface
blown flap. Volume 2: Design compendium [AD-770110] N74-1	6751 TWO DIBERSIONAL PLOW
STOL tactical aircraft investigation-externally	Calculation of the displacement effect in
blown flam. Volume 5: Flight control	two-dimensional subsonic attached flow around aerofoils. Examples of calculations using
technology. Part 2: Simulation studies/fligh	measured displacement thicknesses
control system validation [AD-770449] 874-1	
OD DC Z C	
Equipment for aircraft and helicopter technical	U
servicing Russian book	9370 UNSTEADY PLOW
	Unsteady viscous flow on oscillating airfoils
STERTER REDUKS	
TURBINE BLADES Survey of trace metals in distillate fuels	[AIAA PAPER 74-182] A74-20774
Survey of trace metals in distillate fuels A74-2	[AIAA PAPER 74-182] A74-20774 0217 UNSTRADE STATE
Survey of trace metals in distillate fuels A74-2	[AIAA PAPER 74-182] A74-20774 0217 UNSTRADY STATE A linearized theory for the unsteady motions of a wing in curved flight
Survey of trace metals in distillate fuels A74-2	[AIAA PAPER 74-182] A74-20774 0217 UNSTRADY STATE A linearized theory for the unsteady motions of a wing in curved flight 0311 [AD-769671] B74-15705
Survey of trace metals in distillate fuels A74-2 Selection of the economically optimal blade profile for axial fluid flow engines A74-2	[AIAA PAPER 74-182] A74-20774 0217 UNSTRADY STATE A linearized theory for the unsteady motions of a wing in curved flight [AD-769671] B74-15705 URBAN PLANNING
Survey of trace metals in distillate fuels A74-2 Selection of the economically optimal blade profile for axial fluid flow engines A74-2 TUBBINE ENGINES Reduction of noise from small turbopropulsion	[AIAA PAPER 74-182] 0217 UNSTRADY STATE A linearized theory for the unsteady motions of a wing in curved flight 0311 [AD-769671] UHBAN PLANNING Urban air traffic and city planning: Case study of Los Angeles County Book
Survey of trace metals in distillate fuels A74-2 Selection of the economically optimal blade profile for axial fluid flow engines A74-2	[AIAA PAPER 74-182] O217 UNSTRADY STATE A linearized theory for the unsteady motions of a wing in curved flight O311 [AD-769671] UEBAN PLANNING Urban air traffic and city planning: Case study of Los Angeles County Book

	C-5A/orbiter wind tunnel testing and analysis:
V	Piggyback ferry [NASA-CR-133484] N74-15717
Y/STOL AIRCRAPT	WIND TONNELS
Vectored thrust V/STOL shipboard testing A74-19498	Ames research facilities summary 1974 wind tunnels, shock tubes, ballistic ranges, flight
Noise characteristics of a turbulent crosswind jet	simulators, research aircraft, and computers
A74-20281 Design of a flight director/configuration	[NASA-TH-X-69411] N74-15939 WIND VELOCITY
nanagement system for piloted STOL approaches	Wind modification over the flight decks of
[NASA-CE-114688] N74-15715 VARIABLE GEOMETRY STRUCTURES	bigh-speed ships [AIAA PAPER 74-301] A74-21291
Effect of configuration variation on externally blown flap noise	WINDOWS (APRETURES)
[AIAA PAPER 74-190] A74-20775	Conference on Transparent Aircraft Enclosures development and design concepts for vision areas
VERTICAL FLIGHT Studies in low speed flight model helicopter	of crew enclosures
hovering flight test facility	[AD-769344] 874-15727 Endurance tests on transport aircraft cockpit
[AD-768858] N74-15728 VESTICAL TAKEOFF AIRCRAFT	window glasses noting European Airbus
A new aircraft/ship mating system	WINDPOWERED GENERATORS N74-16732
[AIAA PAPER 74-303] The design application of aircraft securing and	Method of calculation of annual overall efficiency of modern wind-power plants
traversing systems to the surface effect ship	[NASA-TT-F-15310] N74-15748
(AIAA FAPER 74-304) A74-21293 WIBRATION DAMPING	WINDSHIELDS Conference on Transparent Aircraft Enclosures
Noise suppressing devices Russian book	development and design concepts for vision areas
VISCOUS PLOW A74-20904	of crew enclosures [AD-769344] N74-15727
Unsteady viscous flow on oscillating airfoils [AIAA PAPER 74-182] A74-20774	Transparent fire resistant polymeric structures
VOICE COMMUNICATION	[WASA-CASE-ARC-10813-1] R74-16249 Effect of adhesive on the impact resistance of
Lockheed 5-3A avionics - Tactical voice and data communication	laminated plastics for windshield applications
A74-19753	[AD-769735] N74-16259 Report on the Conference on Transparent Aircraft
Evaluation of voice recorders for aircraft [AD-770517] N74-16906	Enclosures
VORTICES	WING PLANFORMS
Trailing vortex effects on following aircraft A74-19778	A linearized theory for the unsteady motions of a wing in curved flight
Vortexes in aircraft wakes light aircraft hazards	(AD-769671) N74-15705
174- 22206	WING PROFILES Humerical solution of the problem of supersonic
Evaluation of effectiveness of various devices for attenuation of trailing vortices based on model	gas flow over the upper surface of a delta wing
tests in a large towing basin	in the expansion region A74-22283
[WASA-CR-2202] W74-15710	#INGS
W	An approximate method for the calculation of the pressure distribution on a wing-cone configuration
WARNING SYSTEMS	A74-20086 An experimental investigation of a high lift
Realization of a horizontal collision avoidance system	device on the owl wing
WEAPON SISTEMS A74-20099	[AD-759492] Design and fabrication of a boron/aluminum
Some experiences from the use of an LCC approach	composite wing how test specimen
Life Cycle Cost for weapon systems acquisition	[AD-770203] H74-16741
BRIGHT ANALYSIS	X
The development and evaluation of weight-estimation formulas for aircraft design	I-22 AIRCRAFT
With the aid of methods of mathematical	X-22A fixed-base ground simulator facility [AD-769942] N74-16997
statistics and probability calculus German book	
WIND EFFECTS A74-20049	Υ
Compressibility effects in unsteady thin-airfoil	<pre>FF-16 AIBCEAFT General Dynamics lightweight fighter F-16</pre>
theory	aircraft development and production
Wind modification over the flight decks of	TIELD STRENGTH
high-speed ships [AIAA PAPER 74-301] A74-21291	Photoelastic analysis of the stress field
WIND PROFILES	surrounding a fatigue crack A74-19259
Noise characteristics of a turbulent crosswind jet A74-20281	<u>-, , ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,</u>
WIND TUNNEL STABILITY TESTS The results of a high-speed wind tunnel test to	
investigate the effects of the dags roten amon	
engine macelles on the stability and control characteristics of the Boeing 727 airplane	
[NASA-CR-134545] #74-16736	
Trailing Vortex effects on following aircraft	
W/STOL tilt rotor aircraft study: Wind tunnel	
tests of a full scale hindeless properties	
designed for the Boeing Model 222 tilt rotor	
[NASA-CB-114664] N74-15711	

PERSONAL AUTHOR INDEX

AERONAUTICAL ENGINEERING / A Special Bibliography (Suppl. 44)

MAY 1974

Typical Personal Author Index Listing

The effects of leading-edge serrations on reducing flow unsteadiness about airfoils, an experimental and analytical investigation

NASA-CR-2344

TITLE

REPORT
NUMBER

NASA
ACCESSION
NUMBER

Listings in this index are arranged alphabetically by personal author. The title of the document provides the user with a brief description of the subject matter. The report number helps to indicate the type of document cited (e.g., NASA report, translation, NASA contractor report). The accession number is located beneath and to the right of the title, e.g., N74-10019. Under any one author's name the accession numbers are arranged in sequence with the IAA accession numbers appearing first.

A

ABBAMS, R.
Longitudinal stability for supersonic transport
aircraft
A74-19490
ADAMS, D. F.

High-performance composite materials for vehicle construction: An elastoplastic analysis of crack propagation in a unidirectional composite [AD-769867]

AKHAND, S. A.
Air traffic control scheme through simulation
A74-20663

ALAG, G.
Digital adaptive model following control

A74-21338

LBAN, 8. Trends in hydraulic systems of commercial transport aircraft

A74-19471

ALEXANDER, H. R.

V/STOL tilt rotor aircraft study: Wind tunnel tests of a full scale hingeless prop/rotor designed for the Boeing Model 222 tilt rotor aircraft
[NASA-CR-114664] N74-15711

ALEXABDER, J. H.

Research and design of a seventy-six (76) foot span aircraft maintenance hanger with quarter shell endwalls
[AD-770299] N74-1

[AD-770299] N74-17001

ALLEN, L. H.

Aircraft life cycle profitability - The operator's

Aircraft life cycle profitability - the operator's challenge [AIAA PAPER 74-281] A74-20837

[AIAA PAPER 74-281] A/4-2083/

Compressibility effects in unsteady thin-airfoil theory

ANDERSON, B. H.
Aircraft antiskid analysis verification and

refinement
[AD-770300] N74-16749

ANDERSON, G. W.

An experimental investigation of a high lift device on the owl wing [AD-769492] R74-15707

AOYAGI, R.
Acoustic characteristics of a large-scale wind
tunnel model of an upper-surface blown flap
transport having two engines
[NASA-TH-X-62319] N74-15719

ARDEMA, N. D.

Long range view of materials research for civil transport aircraft

ASHARE, A. B.

Effect of modified seat angle on air to air weapon
system performance under high acceleration
[AD-770271]
N74-16747

ASSA, APhotoelastic analysis of the stress field
surrounding a fatigue crack

A74-19259

AUGUSTYBIAK, S.
Some problems associated with noise attenuation at jet engine test facilities
A74-19629

В

DC-10 avionics parts reliability in review

BAKER, E. M.
An investigation of cost factors relating to class
4 aircraft modifications

4 aircraft modifications [AD-769195] N74-15730 BARNES, B. L.

An analysis of the phased inspection system for B-52H aircraft (AD-769154) M74-16695

BARRETT, J. E.

Description of six degree of freedom rigid
air craft mathematical models

aircraft mathematical models
[WRZ-TW-901(WR/D)] N7:

BARSOTTI, G.
A method for neasuring the dynamic stability Cyr
in a subsonic wind tunnel
[REPT-1427] 874-19

BARTOSZAK, J.

Some problems associated with noise attenuation at
let engine test facilities

BAULIN, N. N.

Flow of hydrogen-oxygen nixtures around blunted bodies moving at high velocity

BECK, K.

Colombation and observance of landing parameters

Calculation and observance of landing parameters for the aircraft IL-62 and their effect on the safety factor

for the algoratt IL-b2 and their effect on the safety factor

A74-2:
BRHEFIELD. T. D.

Longitudinal stability for supersonic transport aircraft

BENNETT, G. W.

Hydrogen-methane fuel control systems for turbojet

engines
[NASA-CR-121247]

Bydrogen-methane rue: control systems for turbojet
engines
[NASA-CR-121247]

N74-16493

PROSON, D. N.

Program to improve the fracture toughness and
fatique resistance of aluminum sheet and plate
for aircraft applications
[AD-770350]

N74-17278

BERKOVITS, A.
Photoelastic analysis of the stress field

surrounding a fatique crack
A74-19259
BBRESTEIN, S.

Trailing wortex effects on following aircraft A74-19778

BERRY, P.
Digital adaptive flight controller development

A74-20120

BERVEN, L. H.		Roll plane analysis of on-aircraft anten	nas
BD-5 flight test program report	A74-19500	[NASA-CE-136915] BURROWS, L. L.	N74-1695
BETSEE, A. A.		P-15 progress report. II	
Photoelastic analysis of the stress field surrounding a fatigue crack	d	BYU, C. L.	A74-19489
	A74-19259	Roll plane analysis of on-aircraft anten	nas
BIND, G. T. Studies in low speed flight		[NASA-CR-136815]	¥74-16953
(AD-768858)	N74-15728	C	
BLACKERBY, w. T. C-5A/orbiter wind tunnel testing and ana:	lysis:	CAMPBELL, J. R.	
Piggyback ferry [NASA-CR-133484]		STOL tactical aircraft investigation-ext	ernally
BODNER, V. A.	¥74-15717	blown flap. Volume 5: Plight control technology. Part 2: Simulation studie	as/fliah+
Flight vehicle control systems	A74-19374	CODITO⊥ system validation	
BORGER, J. G.		(AD-770449) CAPODAGLI, G.	N74-16752
Aircraft life cycle profitability - The c challenge	operator's	Engine condition monitoring - The Alitali	la approach
[AIAA PAPER 74-281]	A74-20837	CASAROSA, C.	A74-20825
BORKUS, M. X. Correlational ground speed meters and dri	if+	A method for measuring the dynamic stabil	lity Cyr
indicators of flight vehicles		in a subsonic wind tunnel [REPT-1427]	N74-15701
BOROS, A.	A74-20900	CANDERY, P. H. Toward the definition of escape and captu	
A new pneumatic hybrid control system	*74 4000*	regions for a two aircraft pursuit-evas	nre Bion game
BOWLES, J. V.	A74-19884	[AD-770281] CBBECI, T.	R74-17689
Computer programs for estimating aircraft and landing performance	takeoff	Attachment-line flow on an infinite swept	wing
[NASA-TH-X-62333]	N74-16720	CHAMPINE, R. A.	A74-20293
BRADLEY, J. C. Clean, bright, and dry		Fixed-base simulation study of decoupled	controls
	∆74-20213	during approach and landing of a STOL tairplane	:ransport
BRAID, MR. Display systems - An airborne look ahead		[NASA-TN-D-7363] CHERNIAVSKII, S. ID.	N74-15703
BRANCS, M. C.	A74-20595	Flow of hydrogen-oxygen mixtures around h	lunted
Urban air traffic and city planning: Case	study of	bodies moving at high velocity	A74-22304
Los Angeles County	A74-20624	CHERNYI, A. P.	
BRATAHOW, T.		Correlational ground speed meters and dri indicators of flight vehicles	.£t
Numerical calculations of velocity and pr distribution around oscillating airfoil	essure .s	CHIGIBR, W. A.	A74-20900
[NASA-CR-2368] BRAUES, D. A.	N74-16704	Vortexes in aircraft Wakes	
Flight experience with a pivoting travers	ing	CHILDS, M. E.	A74-22206
boundary-layer probe [NASA-TE-X-56022]	¥74-16102	Flowfield analysis for successive oblique	shock
BREAUT, P. Some transmission characteristics of AERO		wave-turbulest boundary-layer interacti	.UIS 174-19777
air traffic control systems	SAT-type	CHRISTERSEN, L. D. hirplane nacelle composite structure tech	nalaan
BREUNINGER, J. R., JR.	A74-19957		11010gy 11010gy 11010gy
An experimental study of attenuation of c	hock	CHRISTOPHER, P. A. T. The influence of non-linear longitudinal	
waves in aircraft fuel tanks [AD-769930]	N74-16750	aerodynamic characteristics on the powe	r
BREWER, G. D.		spectral response of aircraft to atmosp turbulence	heric
Hydrogen - Make-sense fuel for an America supersonic transport	n	CISSELL, R. E.	A74-21105
(AIAA PAPER 74-163) BRINCKMANN, C.	A74-19353	Flight experience with a pivoting travers.	ing
The dynamic behavior of a digital electro	hydraulic	boundary-layer probe [WASA-TH-X-56022]	N74-16102
actuator [NASA-TT-F-15295]	N74-15736	CLARK, J. O.	
BROWN, C. E.		Problems in civil air traffic control whice technology may impact	Ch SAN
Pvaluation of effectiveness of various de attenuation of trailing vortices based	vices for on model	CLARK, L. T.	A74-19390
tests in a large towing basin [NASA-CR-2202]		A prediction model for wake related sound	
BROWN, R. R.	N74-15710	qeneration by single airfoils and subso	nic rotors N74-15700
Aircraft life cycle profitability - The manufacturer's challenge		CLEHERT, N. P.	
[AIAA PAPER 74-280] BROWN, W. C.	A74-20836	A direct procedure for partitioning scann: workload with a flight director	ıng
The technology and application of free-sp	ace power	CHOSSEN, R. S.	A74-21336
transmission by microwave beam	A74-19464	Advanced tracking and data relay experimen	nts
BURGESS, W. H.		study: Multimode transponder experiment	t equipment N74-16887
An investigation of cost factors relating 4 aircraft modifications	to class	CORNE, R.	M 10001
[AD-769195] BURKE, G. J.	N74-15730	Quasi homogeneous approximations for the calculation of wings with curved subson	Lc
Antenna modeling of the KC-135		leading edges flying at supersonic speed [VTB-173]	ds
BORNSIDE, W. D.	N74-16960	COLE, J. B., III	N74-16708
		111	
Roll-plane analysis of on-aircraft antenna		Noise characteristics of a turbulent cross	swind jet A74-20281

GILSON, C. PERSONAL AUTHOR INDEX

COLLIES, T. P. Application of the collision-imparted velo	oit#	BCBR, &. Numerical calculations of velocity and pre-	SSUTE
nethod for analyzing the responses of containment and deflector structures to		distribution around oscillating airfoils [NASA-CR-2368]	
rotor fragment impact [NASA-CE-134494]	N74-16592	EDSE, R. Supersonic combustion and burning in ramite	t
COOK, T. N. Baintainability analysis of major helicopt	er	combustors [AD-770061]	N74-17648
components [AD-769941]	N74-16740	EDWARDS, J. W. The national Microwave Landing System	
CORNEY, N. S. Report on the Conference on Transparent Ai	rcraft	BGORYCHEV, V. A.	<u>174-19317</u>
Enclosures [AD-769372]	ม74-16755	Equipment for aircraft and helicopter technology servicing	
CORRENTI, V. Future advanced-technology aircraft in the	context	BLSANKER, W. K.	A74-19370
of an integrated transport system	274-1 9487	STOL tactical aircraft investigation-exter blown flap. Volume 5: Plight control technology. Part 2: Simulation studies.	nall y /flight
HLH Ground Support Equipment (GSE) prelimi investigation	nary	control system validation [AD-770449]	N74-16752
[AD-768842]	N74-15725	BLSNEB, R. W. Simplified navigation for unmanned aircraft	
CURRIE, M. G. Simplified navigation for unmanned aircraf			A74-20098
CZYRYCA, B. J. Investiqation of the fatigue behavior of l	A74-20098	RSCHER, W. J. D. Hydrogen - Make-sense fuel for an American supersonic transport	
propellers		[AIAA PAPER 74-163]	A74-19353
[AD-769466]	N74-16603	BULA, E. Engine condition monitoring ~ The Alitalia	
D .			1 74-20825
DAMONTE, N. Noise problems in airport design and in ci	vi l	F	
aircraft operation DAVID, G.	A74-19476	PALARSKI, M. D. Acoustic characteristics of a large-scale tunnel model of an upper-surface blown for	
Some transmission characteristics of AEROS air traffic control systems	AT-type	transport having two engines [NASA-TM-X-62319]	%74-15719
	274-1 9957	PARRAH, J. R. Research and design of a seventy-six (76):	foot
Safety during automatic landing with poor	visibility 174-20422	<pre>span aircraft maintenance hanger with gui shell endwalls [AD-770299]</pre>	
DE BOOY, K. A new aircraft/ship mating system [AIAA PAPER 74-303]	A74-21292	FLANDERS, J. D. The single-engine turboprop in the norther	n frontier
DEAL, P. L. Fixed-base simulation study of decoupled c during approach and landing of a STOL tr		FLETCHER, R. S. The environment and the gas turbine	A74-21821
airplane [BBSA-TH-D-7363]	N74-15703	POBLES, G. B.	A74-21874
DELABEY, 8. 1. United States Air Porce aircraft pollution [AD-769482]	emissions N74-17374	Transparent fire resistant polymeric struct [NASA-CASE-ARC-10813-1] FRANZIER, J. W.	N74-16249
DECUE, R. Use of simulation for the development of C	oncorde N74-16733	Effect of modified seat angle on air to air system performance under high acceleration [AD-770271]	
DEWEY, R. G. The impact of conversion to the metric mea	surement	FUCHS, H. V. Analysis of axisymmetric turbulence relevan	nt to
system on aircraft maintenance at base 1 [AD-769186]		jet noise	∆74-19631
DILLEBIUS, M. P. B. Calculation of the longitudinal aerodynami	c	G	
characteristics of STOL aircraft with externally-blown jet-augmented flaps		GALE, C. H.	
[NASA-CR-2358] DOCKSWELL, S.	N74-16719	Flight evaluation of two segment approaches jet transport noise abatement	
US army belicopter rod end bearing reliabi maintainability investigation	lity and	[MASA-CR-114735] GALLOWAY, T. L.	M74-16995
[AD-768843] DORSCH, R. G.	N74-15724	Computer programs for estimating aircraft and landing performance	takeoff
Effect of configuration variation on exter blown flap noise	nally	[NASA-TM-X-62333] GAULT, J. D.	N74-16720
[AIAA PAPER 74-190]	A74-20775	Risk analysis - A program management tool	170 20007
DURES, R. E. Evaluation and redesign of FAA altimeter p		GAVIN, T. J.	174-20987
[AD-769540] DUMM, J. H. H.	N74-16164	X-22A fixed-base ground simulator facility [AD-769942]	N74-16997
The influence of non-linear longitudinal aerodynamic characteristics on the power spectral response of aircraft to atmosph		GBDDES, J. P. The Fairchild Industries 1-10 - Designed for air support	or close
turbulence			A74-21726
	A74-21105	Flight test safety analysis of the all wear	ther
Ę		landing system /AWLS/ program	A74-20974
BBBBPELT, E. Some experiences from the use of an LCC ap	proach	GILSON, C. General Dynamics lightweight fighter	
THE	A74-20944	- *:	A74-21320

GLASS, R. E. PERSONAL AUTHOR INDEX

GLASS, R. E.		EERTWIG, W.	
Noise measurements obtained during enginee		Calculation and observance of landing parameter	
evaluation of two-sequent approaches in	a	for the aircraft IL-62 and their effect on	the
727-200 aircraft		safety factor	
[NASA-CH-114691]	N74-15716		4-22270
GLENDE, W. L. B.		BIGHLAND, H. J. Winter Simulation Conference, Washington, D.C.	
Design of a powered elevator control syste	™ N74~15712		• •
[NASA-CB-114727] GOLDSHITH, J. S.	M74* 13712	January 14-16, 1974, Proceedings. Volume 2	4-20662
Hydrogen-methane fuel control systems for	turbotet	HILLARD, S. E.	7-40002
engines	04220,00	Determination of critical nondimensional	
[HASA-CR-121247]	N74-16493	parameters in aircraft dynamic response to	
GOODBAH, A.		random input	
Evaluation of effectiveness of various dev	ices for		4-16322
attenuation of trailing vortices based of	n model	HOPPHAN, W. C.	
tests in a large towing basin		Analysis of aided inertial navigation systems	
(WASA-CR-2202]	N74-15710	performance on international routes	
GOODTROOMIZ, J. H.			4-20096
Effect of configuration variation on exter	nally	HOPHAND, L. G.	
blown flap noise		A direct procedure for partitioning scanning	
	A74-20775	workload with a flight director	
GRAHAM, D.			4-21336
A direct procedure for partitioning scanni	rnd	HOR, R. H.	
workload with a flight director	A74-21336	Design of a flight director/configuration	
GRAY, R. B.	A/4-21330	management system for piloted STOL approach [NASA-CR-114688] N7:	as 4-15715
Studies in low speed flight		HOLLISTER, P. H.	4-12/12
[AD-768858]	H74-15728	Analysis of aided inertial navigation systems	
GRUSZCZYBSKI, D.	W/4 13720	performance on international routes	
An attempt at describing the steady-state			4-20096
performance characteristic of a turbojet	engine	HOLMES, R. M.	
by a formulated relationship		Airplane nacelle composite structure technologi	3 7
•	174-21784		4-22102
GUSTAVSON, R. G.		BUANG, SC.	
STOL tactical aircraft investigation-exter	nally	The automatic aircraft quidance law for mid-a:	ir
blown flap. Volume 6: Air cushion land	ling	collision avoidance	
system trade study		A74	4-21340
f AD-770448]	N74-16753	HUBER, J.	
		Nitinol as a fastener material	
Н			4-20208
		BUPPEAN, J. L.	_
HABBER, E. S.		OS Army helicopter rod end bearing reliability	yand
Beliability demonstration testing using failure-free trials		maintainability investigation	n - 45334
	A74-20950		4-15724
HANNER, T. S.	R14-20330	HUGHES, A. C. C-5A/orbiter wind tunnel testing and analysis.	
BLB Ground Support Equipment (GSE) prelimi	narv	Piggyback ferry	•
investigation			4-15717
[AD-768842]	¥74-15725	RUHT, D. L.	4-12717
HAMMESPAHR, B. D.		Research and design of a seventy-six (76) foo-	+
A comparative economic analysis of a		span aircraft maintenance hanger with quarte	
lighter-than-air logistics system		shell endwalls	
(AD-769205]	N74-16694	[AD-770299] N7	4-17001
HANDRISHAN, d.		HUSBAND, R. G.	
Electromagnetic effects of aircraft wake-a	ctive	C-51/orbiter wind tunnel testing and analysis	:
feuillet interaction		Piggyback ferry	
EJOUTH #	A74-19915	[WASA-CR-133484] N7	4-15717
A fatique failure criterion for fiber rein	£3		
materials	Torced		
#GC417012	A74-20478	† † † † † † † † † † † † † † † † † † †	
HANK, T. R.	274-20476	ILES, J. R. Voctored throat W/CDOL chiphecod tection	
A comparative economic analysis of a		Vectored thrust V/STOL shipboard testing	4-19498
lighter-than-air logistics system		ILLINGER, J. L.	4-13430
[AD-769205]	N74-16694	Effect of adhesive on the impact resistance of	£
HARARD, K.		laminated plastics for windshield application	nns
Antenna modeling of the KC-135			4-16259
[AD-769913]	N74-16960	INDULKAR, C. S.	
BELDEMBRAND, R. W.		A photo-electric position-following mechanism	
 Reduction of noise from small turbopropuls 	ion		4-20129
engines		ITALIABE, J. J.	
[AIAA PAPER 74-59]	A74-20760	Aircraft life cycle profitability - The	
BELD, L.		manufacturer's challenge	
A new pneumatic hybrid control system	370 # 400¢		4-20836
HELBEBECHT, W. F.	174-19884	IVANOV, H. IA.	
An investigation of airborne displays and	controls	Calculation of supersonic flow past conical be	
for Search and Rescue (SAR). Volume 9:	Drodect		4-19935
Sea Scanner avionics and sensor system	Fredens	Trailing worter offests on following singuals	
[AD-770548]	N74-16754	Trailing vortex effects on following aircraft	4-19778
HEEPPER, B.		A.71	4-13110
Collection of experimental data for aircra			
afterbody drag in the transonic and supe	ft	•	
area at the crapposite and Sape	ft rsonic	J	
range and comparison with theoretical	ft rsonic	James, E. C.	
range and comparison with theoretical calculation methods	ft rsonic	JAMES, B. C. A linearized theory for the unsteady motions of	of a
range and comparison with theoretical	aft ersonic #74-16705	JAMES, B. C. A linearized theory for the unsteady motions of wing in curved flight	of a

-			
JAWSA, R. Explanations and remarks on standards for mechanics		NLBIB, R. H. Design of a flight director/configuration management system for piloted STOL approa	ches 1174-15715
	A74-20522	UMASA-CA-(14000)	
JARVIS, C. B. A digital fly-by-wire technology developme program using an F-8C test aircraft		Numerical calculations of velocity and pres distribution around oscillating airfoils	sure ¥74-16704
[AIAA PAPER 74-28] JARZEBOWSKI, W.	A74-20755	ECPUIG D. G.	
Simulation studies of an airport noise sil	encer 174-21641	Acoustic characteristics of a large-scale we tunnel model of an upper-surface blown fl transport having two engines	.ар .
JATZEN, B. An analysis of the acquisition of the F-11	11	[NASA-TH-X-62319]	¥74-15719
simulators [AD-769202] JEMNY, B.	N74-16693	KOPKOV, G. A. Realization of the power amplification effer ranjet unit by applying the principle of	ect in a
Helicopter windlass rescue with the Alouet	te III A74-21705	boundary layer separation	A74-20069
JOHNSON, W. A.	A74-21705	ROWALEWICZ, A.	ncer
Design of a flight director/configuration	achoe	Simulation studies of an airport noise sile	A74-21641
<pre>management system for piloted STOL appro [NASA-CE-114688]</pre>	N74-15715	KOZLOSKI, F. J. BLH Ground Support Equipment (GSE) prelimin	1aI¥
JONES, W. P. Research on aircraft dynamics for subsonic	fliaht	investigation	
[AD-770540]	N74-16738	(AD-768842)	N74-15725
JOSHI, A. The automatic aircraft guidance law for mi	id-air	KBAIKO, A. B. Calculation of supersonic flow past conical	bodies 174-19935
collision avoidance	A74-21340	KROTKI, J.	
JOUSSEBET, C.	L	Requirements on the purity of aircraft fue.	174-20524
Microelectronic phase shifters in X and Q [BLL-PO-2988-(9022.81)]	N74-15906	KULWICKI, P. V. High acceleration cockpit: The maneuvering countermeasure	;
K		[AD-770287]	¥74-16743
KACZHAREK, H.	mation at	KURSTADT, E. Study of reverse-flow characteristics of a	tip fan
Some problems associated with noise attempted text facilities	INTION OF	and an ejector	N74-16744
-	∆74-19629	[AD-770080] KUO, CC.	874-16744
<pre>KAME, E. J. A study to determine the feasibility of a</pre>	low	Subsonic potential aerodynamics for comple:	ı
sonic boom supersonic transport	¥74-15713	configurations - A general theory	A74-20280
(MASA-CR-2332] KARMARKAR, J. S.	R14-13713	KUPCIS, B. A.	
Realization of a horizontal collision avo	idance	The results of a high-speed wind tunnel ter investigate the effects of the NASA refa-	st to n JT8D
system KASTHER, T. H.	A74-20099	engine nacelles on the stability and con- characteristics of the Boeing 727 airpla: [NASA-CB-134545]	troi
Putting the computer in its place	A74-19497	(hrea or leasted)	
KAUPHAH, H.		Ĺ	
Digital adaptive flight controller develo	ршеп с 174-20120	LALLEMANT, P.	
Digital adaptive model following control	<u>2</u> 74-21338	Various mechanisms applied to the Concorde landing gear	main A74-20548
KPEGAN, B. B. Plight test safety analysis of the all we	ather	LANGE, G.	
landing system /AWLS/ program		Failure of helicopter turbines due to the employment of a steel in a corrodible co	ndition
KELLY. A. J.	374-20974	in combination with a design unsuited fo	r the
Electromagnetic effects of aircraft wake-	active	material	A74-20498
feuillet interaction	A74-19915	LARSON, T. J.	
RELSEY, R. A.		A simplified flight-test method for determ aircraft takeoff performance that includ	ining es
Effect of polymer coatings on fatique str aluminum alloy 2024 box heams	enden or	effects of pilot technique	
[NASA-CH-114699]	N74-16250	[NASA-TN-D-7603]	¥74-16717
KHACHIKIAM, B. D. Equipment for aircraft and helicopter tec	hnical	LEBEDEY, Y. P. Bealization of the power amplification eff ramjet unit by applying the principle of	ect in a
servicing	∆74-19370	boundary layer separation	
KHAIBOVICH, I. A. Parameters of BP flight navigation aids a	nd their	LECARN, R. P.	∆74-2 0069
neasurement	A74-19371	Putting the computer in its place	A74-19497
KIRK, B. J.		LEFEBURE, A. H.	
An investigation of airborne displays and for Search And Bescue (SAR). Volume 9:	controls Project	The environment and the gas turbine	A74-21874
Sea Scanner avionics and sensor system		LBIZBRAKH, A. A.	
[AD-770548]	N74-16754	Collection of problems on airplane pilotin revised and enlarged edition/	
KIRKHAN, K. L- Evaluation of effectiveness of various de	vices for		A74-19372
attenuation of trailing vortices based tests in a large towing basin	on model	LEMON, G. H. Plan for developing structural criteria for	or
tests in a large towing basin [BASA-CR-2202]	N74-15710	composite airfrages	A74-20945
RITZHILLER, C. T. Supersonic combustion and burning in ram	let		B:4-20343
Supersonic combustion and burning in law combustors			
(AD-770061)	¥74-17648		

LEBORT, P.		MARQUART, D. E.	
An attempt at describing the steady-stat	e 	Further studies on speech intelligibility	with
performance characteristic of a turbof by a formulated relationship	et engine	frequency-modulation communication syst	ems under
-,	A74-21784	(REPT-5-73)	N74-16903
LEVY, S. A.	_	HARTON, Z.	114 10303
Program to improve the fracture toughnes, fatique resistance of aluminum sheet a		A new pneumatic hybrid control system	
for aircraft applications	na brate	HATERWS, M. A., JR.	A74-19884
[AD-770350]	N74-17278	SAAB digital flight control	
LEWIS, R. U.		[AIAA PAPER 74-26]	A74-20754
Effect of adhesive on the impact resista laminated plastics for windshield appl.		MAZARBUKO, V., V.	
[AD-769735]	N74-16259	Measurement of pressure on an oscillating in transonic flow	aileron
LIPCHIN, L. TS.		[AD-769982]	N74-16739
Reliability of aircraft navigation compu-		HCAULTA, H. J.	
LIPCHIN, TS. N.	A74-20905	The effects of interference on monopulse	performance
Reliability of aircraft navigation compu-	ters	[AD-769336] HCCONHELL, J. C.	N74-15876
	A74-20905	Atmospheric ozone - Possible impact on	
LOCKS, E. O. Simulation of dispatch polichility for a	#1 #	stratospheric aviation	
Simulation of dispatch reliability for a large commercial aircraft	Ileet or	Possible officets of a float of auror	174-20039
	174-20952	Possible effects of a fleet of supersonic transports on the stratospheric ozone si	hiola
LOVELACE, A. H.	_		A74-20125
Advanced composites [AIAA PAPER 74-242]	374 20074	ECCEOSKEY, W. J.	
LUCE, L.	A74-20834	Unsteady viscous flow on oscillating airfo	
VITAL II		[AIAA PAPER 74-182] MCELROY, M. B.	A74-20774
	A74-20275	Atmospheric ozone - Possible impact on	
LUNDQUIST, G. B.		stratospheric aviation	
Energy problems in air transportation	174-19479	MCCIDAT & D	A74-20039
LYON, C. A.		MCGARTY, T. P. The effect of interfering signals on the	
Beduction of noise from small turbopropul	lsion	performance of angle of arrival estimate	es
engines		•	A74-19908
[AIAA PAPER 74-59] LYONS, J. P.	A74-20760	MCKINLAY, W. H.	
High acceleration cockpit: The maneuveri	ing	The evolution of electronic displays for a military aircraft	civil and
counterneasure	.,	and a second of the second of	A74-21729
[AD-770287]	W74-16743	MCMABON, H. M.	
A 4		Studies in low speed flight [AD-768858]	
M			1974-157∠8
· · ·		CCMADAKA, J. R.	
MAGEE, J. P.	_	MCWAMARA, J. B. The fuel crisis and the controller	
V/STOL tilt rotor aircraft study: Wind t	cunnel	The fuel crisis and the controller	A74-19726
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/ro	otor	The fuel crisis and the controller	
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/rodesigned for the Boeing Model 222 tilt aircraft	otor	The fuel crisis and the controller	
V/STOL tilt rotor aircraft study: Wind t tests of a full scale hingeless prop/ro designed for the Boeing Model 222 tilt aircraft (NASA-CR-114664)	otor	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELNIKOV, B. N.	พ74-17376
V/STOL tilt rotor aircraft study: Wind t tests of a full scale hingeless prop/rc designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPRECER, E. P.	rotor	The fuel crisis and the controller HELLOB, A. H. Atmospheric pollution by aircraft engines [AD-769655] HELLIKOV, B. W. Reduction of aircraft noise in the vicinit	พ74-17376
V/STOL tilt rotor aircraft study: Wind t tests of a full scale hingeless prop/ro designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, 2. P. Zeppelins - Not again	rotor	The fuel crisis and the controller MELLOB, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELNIKOV, B. N. Beduction of aircraft noise in the vicinit airports	N74-17376 ty of
V/STOL tilt rotor aircraft study: Wind t tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, E. P. Zeppelins - Not again	otor rotor #74-15711	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] MELHIKOV, B. W. Enduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] MENDREHALL, M. R.	N74-17376 ty of: N74-15718
V/STOL tilt rotor aircraft study: Wind t tests of a full scale hingeless prop/ro designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, 2. P. Zeppelins - Not again	otor rotor N74-15711 N74-20167	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] MELNIKOV, B. W. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] MENDENHALL, M. R. Calculation of the longitudinal aerodynamic	N74-17376 ty of: N74-15718
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/redesigned for the Boeing Model 222 tilt aircraft (NASA-CR-114664) BAIRESPRECER, E. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBHICZ, A. P.	h74-15711 h74-20167 h74-19388	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELLIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] MENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with	N74-17376 ty of: N74-15718
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/rd designed for the Boeing Model 222 tilt aircraft (NASA-CR-114664) BATERSPERCER, Z. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MAIKEBUCZ, A. P. An investigation of cost factors relating	h74-15711 h74-20167 h74-19388	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. K. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] BENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps	N74-17376 ty of N74-15718 ic
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/rodesigned for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, 2. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBHICZ, A. P. An investigation of cost factors relating 4 aircraft modifications	N74-15711 N74-20167 N74-19388 to class	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MEEZ, A. N.	N74-17376 ty of N74-15718 ic N74-16719
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, E. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195]	h74-15711 h74-20167 h74-19388	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BRINIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] HENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CR-2358] HENZ, A. W. Bealization of a horizontal collision avoi	N74-17376 ty of N74-15718 ic N74-16719
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] MAINESPERCED, 2. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBHICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] MALVER, P. S. An investigation of airborne displays and	N74-15711 A74-20167 A74-19388 to class N74-15730	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MEEZ, A. N.	N74-17376 ty of N74-15718 ic N74-16719
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, Z. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBNICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] MAIVER, P. S. An investigation of airborne displays and for Search and Rescue (SAR). Volume 9:	N74-15711 A74-20167 A74-19388 to class N74-15730	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BRINIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] HENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CR-2358] HENZ, A. W. Bealization of a horizontal collision avoi	N74-17376 ty of N74-15718 ic N74-16719
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [Mass-CR-114664] BAIRESPERCER, Z. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices HALKIBHICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] BALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system	N74-15711 A74-20167 A74-19388 To class N74-15730 Controls Project	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] MENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. W. Realization of a horizontal collision avoi system MIAGKOV, V. I. Realization of the power amplification eff	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft	N74-15711 A74-20167 A74-19388 T to class N74-15730 Controls Project N74-16754	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] BERZ, A. W. Bealization of a horizontal collision avoi system HIGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [MaSA-CR-114664] BATERSPERCER, Z. Z. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices HALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] BALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN, W. A. The impact of conversion to the metric me	N74-15711 A74-20167 A74-19388 To class N74-15730 Controls Project N74-16754	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] MENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. W. Realization of a horizontal collision avoi system MIAGKOV, V. I. Realization of the power amplification eff	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] MATHERSPERCER, Z. P. Zeppelins - Not again MATHES, J. D. Applications of surface wave devices MALKIBUICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] MALVIER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base	N74-15711 A74-20167 A74-19388 to class N74-15730 controls Project N74-16754	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MEEZ, A. N. Realization of a horizontal collision avoi system MIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JR.	N74-17376 ty of N74-15718 ic N74-16719 Idance A74-20099 fect in a
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, Z. F. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] BAIVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186]	N74-15711 A74-20167 A74-19388 To class N74-15730 Controls Project N74-16754	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BRINIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] HENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CR-2358] HENZ, A. W. Bealization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation HILLER, G. K., JR. Fixed-base simulation study of decoupled of	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a
V/STOL tilt rotor aircraft study: Wind tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, E. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] MALVER, P. S. An investigation of airborne displays and for Search and Rescue (SAR). Volumé 9: Sea Scanner avionics and sensor system [AD-770548] MARN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria f	N74-15711 A74-20167 A74-19388 To class N74-15730 Controls Project N74-16754 Casurement Level E74-15733	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. K. Beduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MEEZ, A. W. Realization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation HILLER, G. K., JB. Fixed-base simulation study of decoupled co during approach and landing of a STOL tr	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, Z. F. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] BAIVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186]	N74-15711 A74-20167 A74-19388 To class N74-15730 Controls Project N74-16754 Casurement Level E74-15733	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. N. Realization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JR. Pixed-base simulation study of decoupled of during approach and landing of a STOL tr	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a : A74-20069 controls cansport
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [MASA-CR-114664] BAIRESPERCER, Z. P. Zeppelins - Not again MAIRES, J. D. Applications of surface wave devices MALKIBRICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] MALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria f composite mirframes	N74-15711 A74-20167 A74-19388 To class N74-15730 Controls Project N74-16754 Casurement Level E74-15733	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELNIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] MENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. W. Bealization of a horizontal collision avoi system MIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JB. Pixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, W. S.	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] MAINESPERCER, E. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBWICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] MALVER, P. S. An investigation of airborne displays and for Search and Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria f composite mirframes MARDAN-BEY, Q. H.	#74-15711 #74-15711 #74-20167 #74-19388 # to class #74-15730 # controls #roject #74-16754 #saurement #evel #74-15733 or #74-20945	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. N. Bealization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JR. Pixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, N. S. Aircraft/Ship interface problems - The U.S	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft (NASA-CR-114664) BAIRESPERCER, Z. F. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195) BAIVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria for composite airframes BABDAM-BBY, C. B. An optimal control approach to airplane s	#74-15711 #74-15711 #74-20167 #74-19388 # to class #74-15730 # controls #roject #74-16754 #saurement #evel #74-15733 or #74-20945	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] HERMIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] HENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CR-2358] HERZ, A. W. Realization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation HILLER, G. K., JE. Fixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] HITCHELL, W. S. Aircraft/ship interface problems - The U.S program	N74-17376 ty of N74-15718 ic N74-16719 Idance A74-20099 fect in a A74-20069 controls ansport N74-15703
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [NASA-CR-114664] BAIRESPERCER, F. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBUICZ, A. P. An investigation of cost factors relating 4 aircraft modifications [AD-769195] MALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MARN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria f composite airframes MABDAN-BEY, O. H. An optimal control approach to airplame s augmentation systems design	#74-15711 #74-15711 #74-20167 #74-19388 # to class #74-15730 # controls #roject #74-16754 #saurement #evel #74-15733 or #74-20945	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. N. Bealization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JR. Pixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, N. S. Aircraft/Ship interface problems - The U.S	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft (NASA-CR-114664) BAIRESPERCER, Z. T. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. F. An investigation of cost factors relating 4 aircraft modifications (AD-769195) MALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria f composite airframes MADDAM-BEY, C. H. An optimal control approach to airplane s augmentation systems design	N74-15711 A74-20167 A74-19388 T to class N74-15730 Controls Project N74-16754 Saurement level N74-15733 or A74-20945 tability N74-16712	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] HELLIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] HENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CR-2358] HEERZ, A. W. Bealization of a horizontal collision avoi system HIAGKOV, V. L. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation HILLER, G. K., JR. Fixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] NITCHELL, W. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] HITTELUNG, K. Changes in flutter results by stiffening s	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20069 fect in a A74-20069 controls ansport N74-15703
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [MASA-CR-114664] MAINESPERCER, E. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBWICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] MAIVER, P. S. An investigation of airborne displays and for Search and Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria for composite airframes MARDAN-BEY, O. H. An optimal control approach to airplane saugmentation systems design MARHEFKA, R. J. Roll-plane analysis of on-aircraft antenn	N74-15711 A74-20167 A74-19388 I to class N74-15730 Controls Project N74-16754 Hasurement level H74-15733 Or A74-20945 tability N74-16712	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BERDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. W. Realization of a horizontal collision avoi system MIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JB. Fixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] NITCHELL, W. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] MITTELUNG, K. Changes in flutter results by stiffening s degrees of freedom	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703 6. Wavy's A74-21294 come
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [MASA-CR-114664] BAIRESPERCER, Z. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] MAIVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria for composite airframes MADDAN-BEY, O. B. An optimal control approach to airplane saugmentation systems design MABHEFKA, R. J. Roll-plane analysis of on-aircraft antenn	N74-15711 A74-20167 A74-19388 I to class N74-15730 Controls Project N74-16754 Hasurement level H74-15733 Or A74-20945 tability N74-16712	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. N. Bealization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JR. Pixed-base simulation study of decoupled c during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, N. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] MITTELUNG, K. Changes in flutter results by stiffening s degrees of freedon [TR-195]	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20069 fect in a A74-20069 controls ansport N74-15703
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft (NASA-CR-114664) BATERSPERCEN, Z. P. Zeppelins - Not again MATHES, J. D. Applications of surface wave devices MALKIBHICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195) MALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria for composite airframes MABDAM-BEY, O. H. An optimal control approach to airplane saugmentation systems design MABHEFFA, R. J. Roll-plane analysis of on-aircraft antenn [NASA-CR-136815]	N74-15711 A74-20167 A74-19388 I to class N74-15730 Controls Project N74-16754 Hasurement level H74-15733 Or A74-20945 tability N74-16712	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. W. Realization of a horizontal collision avoi system MIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JB. Fixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, W. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] MITTELUNG, K. Changes in flutter results by stiffening s degrees of freedom [TR-195] MKHTUMOV, A. S. Flow of hydrogen-oxygen mixtures around bl	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703 i. Wavy's A74-21294 come N74-15709
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [MASA-CR-114664] BAIRESPERCER, E. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBWICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] MAIVER, P. S. An investigation of airborne displays and for Search and Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN, W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria f composite airframes MAPDAN-BEY, O. H. An optimal control approach to airplane s augmentation systems design MARHEFRA, R. J. Roll-plane analysis of on-aircraft antenn (NASA-CR-136815] MARKONITZ, O.	N74-15711 A74-20167 A74-19388 I to class N74-15730 Controls Project N74-16754 MASSUREMENT Level H74-15733 Or A74-20945 tability N74-16712 as A74-19228 as N74-16953	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. N. Bealization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JR. Pixed-base simulation study of decoupled c during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, N. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] MITTELUNG, K. Changes in flutter results by stiffening s degrees of freedon [TR-195]	N74-17376 ty of N74-15718 ic N74-16719 Idance A74-20099 fect in a A74-20069 controls ansport N74-15703 i. Navy's A74-21294 come N74-15709 unted
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft (NASA-CR-114664) BATERSPERCEN, Z. P. Zeppelins - Not again MATHES, J. D. Applications of surface wave devices MALKIBHICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195) MALVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria for composite airframes MABDAM-BEY, O. H. An optimal control approach to airplane saugmentation systems design MABHEFFA, R. J. Roll-plane analysis of on-aircraft antenn [NASA-CR-136815]	N74-15711 A74-20167 A74-19388 I to class N74-15730 Controls Project N74-16754 MASSUREMENT Level H74-15733 Or A74-20945 tability N74-16712 as A74-19228 as N74-16953	The fuel crisis and the controller HELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] HELLIKOV, B. N. Beduction of aircraft noise in the vicinit airports [NASA-TT-F-15237] HENDENHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CR-2358] HERZ, A. W. Bealization of a horizontal collision avoi system HIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation HILLER, G. K., JR. Fixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] HITCHELL, W. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] HITTELUNG, K. Changes in flutter results by stiffening s degrees of freedom [TR-195] HERTUNOV, A. S. Plow of hydrogen-oxygen mixtures around bl bodies moving at high velocity	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703 i. Wavy's A74-21294 come N74-15709
V/STOL tilt rotor aircraft study: Wind to tests of a full scale hingeless prop/re designed for the Boeing Model 222 tilt aircraft [MASA-CR-114664] BAIRESPERCER, Z. P. Zeppelins - Not again MAINES, J. D. Applications of surface wave devices MALKIBBICZ, A. P. An investigation of cost factors relating 4 aircraft modifications (AD-769195] MAIVER, P. S. An investigation of airborne displays and for Search And Rescue (SAR). Volume 9: Sea Scanner avionics and sensor system [AD-770548] MANN. W. A. The impact of conversion to the metric me system on aircraft maintenance at base [AD-769186] MANNING, S. D. Plan for developing structural criteria for developing structural criter	N74-15711 A74-20167 A74-19388 I to class N74-15730 Controls Project N74-16754 MASSUREMENT Level H74-15733 Or A74-20945 tability N74-16712 as A74-19228 as N74-16953	The fuel crisis and the controller MELLOR, A. M. Atmospheric pollution by aircraft engines [AD-769655] BELHIKOV, B. N. Enduction of aircraft noise in the vicinit airports [NASA-TT-P-15237] BENDEWHALL, M. R. Calculation of the longitudinal aerodynami characteristics of STOL aircraft with externally-blown jet-augmented flaps [NASA-CB-2358] MERZ, A. W. Realization of a horizontal collision avoi system MIAGKOV, V. I. Bealization of the power amplification eff ramjet unit by applying the principle of boundary layer separation MILLER, G. K., JB. Fixed-base simulation study of decoupled of during approach and landing of a STOL tr airplane [NASA-TN-D-7363] MITCHELL, W. S. Aircraft/ship interface problems - The U.S program [AIAA PAPER 74-305] MITTELUNG, K. Changes in flutter results by stiffening s degrees of freedom [TR-195] MKHTUMOV, A. S. Flow of hydrogen-oxygen mixtures around bl	N74-17376 ty of N74-15718 ic N74-16719 idance A74-20099 fect in a A74-20069 controls ansport N74-15703 i. Navy's A74-21294 come N74-15709 unted

PERSONAL AUTHOR INDEX

MONTOYA, L. C. Flight experience with a pivoting traversing	1 g	Р	
boundary-layer probe [NASA-TH-X-56022]	N74-16102	PAINTER, J. A. A study to determine the applicability of	noise
Subsonic potential aerodynamics for complex		abatement approach procedures to McDonne Douglas Aircraft	11
configurations - A general theory	A74-20280	[WASA-CR-114677]	N74-15714
Some considerations on the performance of	the fan	PALFERY, J. G. Studies in low speed flight [AD-768858]	¥74 ~157 28
jet engine {NAL-TR-317}	N74-16486	DAVICETRY F. R.	3 41.40
MOSKATOV, G. K.		Parameters of RF flight navigation aids an neasurement	d cherr
Reliability of adaptive systems	A74-20919		A74-19371
MODLE, G. L. The reduction of garbling in secondary		FARKER, 8- D- High integrity ATC data links	A74-19392
surveillance radar	A74-19391	PARKER, J. A.	.+
HOUNTFORD, L. A. The implications for air transportation of	energy	Transparent fire resistant polymeric struc [NASA-CASE-ARC-10813-1] PATERSOF, J. H.	N74-16249
shortage	A74-19486	C-51/orbiter wind tunnel testing and analy	sis:
HUERE, C. E.		Piggyback ferry [NASA-CR-133484]	N74-15717
Becent advances in air traffic control rad	ars A74+19315	PARTER G. T.	
MURNZBERG, H. G.		Simulation of dispatch reliability for a f large commercial aircraft	leet of
Aerodynamic problems of turbojet propulsio systems, repercussions on gas turbine de	velopment	PRIRCE, S. D.	A74-20952
HULQUIN, J. J.	A74-20313	Evaluation of voice recorders for aircraft	1274-16906
Conceptual options for future aircraft-shi	p	[AD-770517] PBNNBR, J. B.	W/4-10300
operations [AIAA PAPER 74-300]	A74-21290	Atmospheric ozone - Possible impact on	
HURPHY, R. D.		stratospheric aviation	A74-20039
Wind modification over the flight decks of high-speed ships [AIAA PAPRE 74-301]	A74-21291	PETRAITS, J. J. The single-engine turboprop in the norther	n frontier
N		PEZZANI, G. Airports evolution and qualification	A74-21821
BAUGLE, D. P. United States Air Porce aircraft pollution	emissions	PHILIPPE. J. J.	A74-19481
[AD-769482]	N74-17374	Unsteady viscous flow on oscillating airfo	ails A74-20774
Analysis of the flow about delta wings wit leading edge separation at supersonic sp	h eeds 1974-15704	PIERS, W. J. Calculation of the displacement effect in two-dimensional subsonic attached flow	around
[NASA-CR-132358] BBYEZHINA, T. P. Measurement of pressure on an oscillating		aerofoils. Examples of calculations us measured displacement thicknesses	inq
in transonic flow	¥74-16739	[NLR-TR-72116-U] PIGRAUD, F. D.	N74-16707
[AD-769982] BRHEAM, R. L.		method of calculation of annual overall e	fficiency
The single-engine turboprop in the norther	n frontier 174-21821	of modern wind-power plants (NASA-TT-F-15310] PLUMER, J. A.	N74-15748
NIXOB, D. The high subsonic flow around a two-dimens aerofoil with a trailing edge control su	ional rface	Preliminary tests of vulnerability of typ: aircraft electronics to lightning-induce	ed voltades
	a74-21104	[NASA-CR-2350] POGODIN, A. S.	N74-15720
Biffect of polymer coatings on fatigue stre	ength of	Noise suppressing devices	A74-20904
aluminum alloy 2024 box beans [NASA-CH-114699]	N74-16250	POLLACK, A. S. Reliability and choosing number of protot	ypes
Reliability and choosing number of prototy	7pes 174-20938	POLLITT, J. E.	174-20938
		The case for engine flying test beds	174-19499
44		POPESCU, N. D. Dynamic stability of swepthack aircraft w	ings
OGREW, S. Some experiences from the use of an LCC and	pproach A74-20944	under the action of variable aerodynami	c forces 174-22225
OKUBOTO, V. B. STOL tactical aircraft investigation-external	nally	Q	
blown flap. Volume 5: Plight control technology. Part 2: Simulation studies control system validation	s/flight	QUAM, R. A. STOL tactical aircraft investigation, ext	ernally
[AD-770449]	N74-16752	blown flap. Volume 2: Design compendi [AD-770110]	n74-16751
Some transmission characteristics of ABRO:	SAT-type	n	
air traffic control systems	A74-19957	R	
OSORIE, E. I. Bguipment for aircraft and helicopter tec	hnical	RAJPERT, T- Statistical analysis of aircraft noise le	vels 274-1963B
servicing	≥74-19370	RAMSEI, C.	
		Art of the Stretch 8. I	A74-20274

RAMSEY, V. W.		SCHEELDER, W.	
Acoustic scattering from an aircraft tra		The development and evaluation of	
BAVENELLE, B. L.	N74-16377	weight-estimation formulas for aircraft	t design
High acceleration cockpit: The maneuver	ing	with the aid of methods of mathematical statistics and probability calculus	L
countermeasure [AD-770287]	V71 46743		A74-20049
REGGIORI, A.	N74-16743	SCHOPHSTADT, A. L.	
An approximate method for the calculation	n of the	A nonlinear relay model for post stall os [AD-769405]	Scillations N74-15706
pressure distribution on a wing-cone c		SCHULKE, G. J.	
REIN, J. A.	A74-20046	An analysis of the acquisition of the P-1	1118
Description of six degree of freedom rig	id	simulators [AD-769202]	N74-16693
aircraft mathematical models [WRE-TM-901(WR/D)]	MAN 45305	SCHWEIKHARD, W. G.	
REBAUD, A.	67 4-15702	A simplified flight-test method for deter	mining
Helicopter applications at sea		aircraft takeoff performance that inclu effects of pilot technique	ides
BEBSELIER, D. J.	A74-19690	[NASA-TH-D-7603]	N74-16717
STOL tactical aircraft investigation, ex	termall v	SCHWENK, W.	,
blown flap. Volume 2: Design compend:	ium	Nitinol as a fastener material	A74-2020B
[AD-770110] RICE, R. E.	N74-16751	SEIDLER, P.	
Supersonic combustion and burning in ran-	1a+	Aerodynamic analysis of various flight co	nditions
combustors	ler	of conventional aircraft. IX - herodyna foundations /General Survey/	nic
[AD-770061]	N74-17648		A74-22273
Atmospheric pollution by mircraft engines	=	SEKIHE, S.	
[AD-769655]	N74-17376	Some considerations on the performance of jet engine	the fan
BODRIGUES, A.		[NAL-TR-317]	N74-16486
Drop and static tests on a tenth-scale mo Air Cushion Landing System (ACLS)	del of an	SELDEN, E. S.	274 10400
[AD-770026]	N74-16742	Antenna modeling of the KC-135 [AD-769913]	
ROE, H. H.	_	SEVIE, M. M.	N74-16960
STOL tactical aircraft investigation, ext blown flap. Volume 2: Design compendi	ernally	Determination of critical nondimensional	
[AD-770110]	เนล พ74-16751	parameters in aircraft dynamic response	to
ROGERS, D. B.		random input [NASA-CR-2361]	878 46300°
Effect of modified seat angle on air to a	ir wearon	SHAHADY, P. 1.	N74-16322
system performance under high accelerat	ion N74+16747	Reduction of noise from small turbopropul	sion
FOGERS, J. R.		engines [AIAA PAPER 74-59]	131 00040
Two dimensional air cushion landing syste	e m	SHANNON, J. H.	A74-20760
peripheral jet configuration study (AD-769494]	N74-15729	A study to determine the applicability of	noise
ROGERS, R. A.		abatement approach procedures to McDonn Douglas Aircraft	ell
Plight evaluation of two segment approach	es for	[NASA-CR-114677]	N74-15714
<pre>1et transport noise abatement [NASA-CR-114735]</pre>	N30 16005	SHAPLEY, J. J.	
HONDOT, J.	N74-16995	FAM certification of the S-58T helicopter instrument flight. II	for
Digital adaptive model following control		rusergment IIIûuf. II	A74-19492
BOSEBBACH, R.	A74-21338	SHIPBAN, K. W.	_
Engineering aspects with satellite common	ication	Helicopter blade-tip stability in forward	
terminate in discratt		SHISHKO, R.	N74-16711
[REPT-7-72] ROSSI, G.	N74-15842	Technological change through product impro	vement
A method for measuring the dynamic stabil	ity Car	in alteratt turbine engines	
10 a subsonic wind tunnel	10, 0,2	(AD-769911) SHOOMAN, M. L.	N74-17519
[REPT-1427] ROTEM, A.	N74-15701	Razard function monitoring of airline com	onents
A fatique failure criterion for fiber rei	nforced		A74-20967
materials	niorced	SKOHROWSKI, W. D. Effect of modified seat angle on air to ai	
	A74-20478	system performance under high acceleration	r weapon
		. [AD-77027]	N74-16747
S		SLOOPP, J. W.	
SARGENT, N. B.		Calculation of the displacement effect in two-dimensional subsonic attached flow a	FARRA
Effect of configuration variation on exter blown flap noise	rnall y	aeroiolis. Examples of calculations usi	.ng
TAIAA PAPER 74-1907	A74-20775	measured displacement thicknesses	_
SAUKO, P. H.		[NLR-TR-72116-U] SHALL, D. B.	N74-16707
Transparent fire resistant polymeric struc	tures	Flight test of the ski equipped Mohawk	
SCHIPP, B. I.	N74-16249		A74-21820
Possible effects of a fleet of enpercepie		SHILBS, K. A.	
transports on the stratospheric ozone sh	hield	Effect of modified seat angle on air to at system performance under high accelerations.	ou r meshor
SCHRIDT, W.	A74-20125	[AD-770271]	N74-16747
The Dolphin airship with undulating propul	lsion	SHITH, J. R.	
system - A new form of the evaluation fa	ictor	Aircraft/ship interface problems - The U.S program	. Navy's
SCHHIDT, W. R.	A74-22272	(AIAA PAPBR 74-3051	174-21294
Collection of experimental data for aircra	ft	SHOJKAL, Z.	
GILCIDUUY OEAO IN The transcent and ann.	ersonic	Technology of production of sandwich panel aluminum honeycomb cores	s with
range and comparison with theoretical calculation methods			A74-20523
FDMVC_DDUM_75 see	N74-16705		

N74-16705

SOSMOVSKII, A. A. Parameters of BF flight navigation aids a measurement		U	
SPANGLER, G. E.	A74-19371	Hot corrosion of metals, alloys and ceramic	75 77 45000
Program to improve the fracture toughness fatigue resistance of aluminum sheet an	and d plate	[AD-769340]	¥74-15829
for aircraft applications [AD-770350]	N74-17278	Y	
SPANGLER, S. B.	10	VARTH, J. G. The airship can meet the energy challenge	
Calculation of the longitudinal aerodynam characteristics of STOL aircraft with externally-blown jet-augmented flaps	10	VAUNDDERHT. 1_	∆7 4-20166
[NASA-CR-2358]	N74-16719	Column failure of thin-walled compression	iembers
STARSES, F. E.	4	in aircraft wings as affected by wall imperfection and crushing	
Maintainability analysis of major helicop	CET	(VTH-175]	N74-16737
[AD-769941]	N74-16740	VASS, L. S. A look at the British ATC scene. II	
SUN, CC. Flowfield analysis for successive oblique	shock	A LOOK WE CALL DILLOWS IN THE STATE OF THE S	A74-19727
wave-turbulent boundary-layer interacti	.ons 174-19777	VAUSSY, P. Plexible lifting surfaces	A74-19684
SEUCS, A.		VOIGT, J.	
A new preumatic bybrid control system	A74-19884	The state of development of axial pumps wingupercavitating cascades	
т			A74-20325
TABBER, C. S. Noise measurements obtained during engine	erinq	VOSKRESENSKII, G. P. Numerical solution of the problem of super. gas flow over the upper surface of a del	sonic ta wing
evaluation of two-segment approaches in 727-200 aircraft	ı a	in the expansion region	A74-22283
[NASA-CB-114691] TARDY, J.	N74-15716	W	
Use of simulation for the development of	Concorde #74-16733	BALCK. C. F.	
TEDRICK, R. W.	lodan	S-34 initial operational test and evaluati	A74-19496
Reduction of noise from small turbopropul engines	A74-20760	WALKO, L. C. Preliminary tests of vulnerability of typi	cal
[AIAA PAPER 74-59] TREENBAUM, S.		aircraft electropics to lightning-induce	d voltages 74-15720
Hazard function monitoring of airline con	aponents A74-20967	<pre>[NASA-CR-2350] A test technique for measuring lightning-i voltages on aircraft electrical circuits</pre>	nduced
TPRSTEEGEN, J. Practical experience with a digital electrohydraulic actuator		[NASA-CR-2348]	N74-16716
[NASA-TT-F- 15292]	ม74-15735	Survey of trace metals in distillate fuels	A74-20217
Investigations into the possibilities of the 'Aerodynamic Paradoxon' principle : devices	in fluidic	WARLEY, D. H., III Analysis of control surface augmentation i high-performance aircraft by thrust vect	n oring N74-15726
	A74-19859	[AD-769495] WATERS, H. H.	M14 15120
THUFHIBERGES, A. Selection of the economically optimal blooms	ade	Long range view of materials research for transport aircraft	civil
profile for axial fluid flow engines	A74-20311	transport arrorare	A74-20210
THOMAS, D.		GENNHOLD, W. F.	_
On the effect of quieter aircraft engine	s on noise	Design and fabrication of a boron/aluminum composite wing box test specimen	
and number index /WMI/ walues	A74-22244	(AD-770203) WERCHMIAK. W.	N74-16741
THOMPSON, D. S. Program to improve the fracture toughnes	s and	Investigation of the fatigue behavior of l	large
fatigue resistance of aluminum sheet a for aircraft applications	na plate	propellers [AD-769466]	N74-16603
[AD-770350] TILL, R. D.	ห74-17278 	<pre>WHITTLEY, D= C= The augmentor wing - Powered-lift STOL a r concept</pre>	proven
X-22A fixed-base ground simulator facili (AD-769942)	N74-16997	WILLIAMS, R. E.	A74-21728
TOCHE, C. A. The design application of aircraft secur	ing and	The implications for air transportation of	f energy
traversing systems to the surface effe [AIAA PAPER 74-304]	ct ship 174-21293	shortage	A74-19486
TONLIN, K. B.	lusis.	WILSON, B. Description of six degree of freedom rigio	đ
C-5A/orhiter wind tunnel testing and ana Piggyback ferry [NASA-CR-133484]	N74-15717	aircraft mathematical models [WRE-TH-901(WR/D)]	N74-15702
TORISAKI, T. Some considerations on the performance of	f the fan	WIMPFORDMER, J. D. Trace spectrometric flame analysis and ga	s + engine
jet engine	N74-16486	chromatographic detectors related to je- oil analysis and gas detection	
(NAL-TR-317] TUNG, C.		[AD-769298]	N74-15830
Analysis of the flow about delta wings w leading edge separation at supersonic [NASA-CE-132358]	ith speeds N74-15704	Application of the collision-imparted well method for analyzing the responses of	
, ,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,,		containment and deflector structures to rotor fragment impact	
		[NASA-CR-134494]	N74-16592

1

RITTHAN, B. E. Conference on Transparent Aircraft Enclosures
[AD-769344] N74-15727 WOTST, S. C. Atmospheric grone - Possible impact on stratospheric aviation A74-20039 WORL, B.
Flight evaluation of two segment approaches for jet transport noise abatement [MASA-CR-114735] N74-N74-16995 WOLF, J.
Studies of an elastic wing WRIGHT, J. B.
FAA certification of the S-58T helicopter for instrument flight. I In situ non-destructive testing of aircraft

structures by holographic interferometry
[BAE-TR-72218] N74-16734 Υ YOUNG, R. L. Baintainability analysis of major helicopter components [AD-769941]

YU, C. L.

Roll-plane analysis of on-aircraft antennas YO, J. C. Air traffic control scheme through simulation A74-20663 Z

ZABLINA, Z. A.
Composition and chemical stability of motor fuels
f AD-770538) N74-168 TALHANZOF, L. A.

A study of the characteristics of measuring elements of pneumonic systems ZABZYCKI, J.
On the effect of quieter aircraft engines on noise and number index /NNI/ values 174-22244

CONTRACT NUMBER INDEX

AERONAUTICAL ENGINEERING / A Special Bibliography (Suppl. 44)

MAY 1974

Typical Contract Number Index Listing



Listings in this index are arranged alphanumerically by contract number. Under each contract number, the accession numbers denoting documents that have been produced as a result of research done under that contract are arranged in ascending order with the IAA accession numbers appearing first. The accession number denotes the number by which the citation is identified in either the IAA or STAR section.

4	•
AF PROJ. 437A	F33615-71-C-1760
N74-17001	N74-16751
AP PROJ. 643A	N74-16752
N74-16751	N74-16753
N74-16752	F33615-71-C-1929
N74-16753	N74-15723
AP PROJ. 1369	P33615-72-C-1066
W74-16742	A74-20945
N74-16749	F33615-72-C-1202
AF PROJ. 4364	N74-17278
N74-20945	
AP PROJ. 7021	F44620-71-C-0100
N74-15829	A74-20478
AF PROJ. 7184	F44620-73-C-0011
N74-16743	N74-17519
AF PROJ. 7222	N74-17626
N74-16747	NASW-2481 N74-15718
AF PROJ. 7351	n74-15735
N74-17278	N74-15 7 36
AF PROJ. 7381	NASW-2482 N74-15748
N74-15727	NAS1-11389 N74-15710
AF PROJ. 9536	NAS1-11577 N74-15704
· N74-15830	NAS1-11623 A74-20293
AF PROJ. 9711	NAS1-11877 N74-15713
N74-1764B	FAS1-12018 H74-16729
AF-AF0SR-1880-70	N74-16730
N74-15830	NAS2-5247 N74-16719
AF-AF0SR-1902-70	WAS2-6415 W74-16250
N74-17648	NAS2-6441 N74-15715
DA PROJ. 1F1-62203-A-434	MAS2-6501 N74-16995
N74-15725	WAS2-6505 N74-15711
DA PROJ. 1F1-62205-A-119	NAS2-6994 N74-16718
N74-15724	NAS2-7293 N74-15712
N74-15724	NAS2-7369 N74-15716
	NAS2-7586 N74-15714
DA PROJ. 1T0-62105-A-329	
N74-16259	
DA-ARO (D) -31-124-71-G153	NASS-14836 N74-15720
N74-16738	N74-16716
DA-ARO (D) -31-124-71-G177	NAS3-17842 N74-16726
N74-15728	NAS5-21824 N74-16887
DAAJ02-71-D-0003	NAS8-27334 N74-16322
¥74-15724	NAS9-13702 N74-15717
DAAJ02-72-C-0041	NGB-22-004-030
N74-15725	A74-20280
DAAJ02-72-C-0065	NGR-22-009-339
N74-16740	N74-16592
DOT-FA72WAI-242	NGR-33-018-1B3
A74-19315	A74-20120
DOT-P172011-261	A74-21338
¥74-15876	NGR-36-008-144
DOT-TSC-473 A74-20096	¥74-16953
ESTEC-1846/72-AA	NGR-48-002-047
N74-16597	A74-19777
F19628-73-C-0002	NGR-50-007-001
A74-19315	N74-16704
P30602-72-C-0135	NR PROJ. 213-072
N74-16960	N74-16754
P33615-71-C-1109	NSP GA-33990X
174-16749	A74-20039
P33615-71-C-1173	NSF GK-30325 A74-20663
N74-17001	N00014-69-C-0460
P33615-71-C-1349	N74-16754
A74-21336	N00019-72-C-0380
	N74-16997
P33615-71-c-1457	N00024-73-C-0907
A/4-20/00	A74-21293
	. A/4-21293

N62269-72-C-0	354
	A74-19228
N62269-72-C-0)414
	N74-16741
PROJ. RAND	N74-17519
	N74-17626
RR0000150	N74-15706
SF35342008	N74-16603
SP54541007	N74-16603
ZR0230101	N74-15705
501-26-05-03	R74-15703
766-72-02	N74-16717
791-93-03-01-	- 15
	N74-16720
797-76-67-10-	- 10
	N74-15712
797-76-88-00-	- 10
	N74-15716
	N74-16995

				
1, Report No. NASA SP-7037 (44)	2. Government Accessio	on No.	3. Recipient's Catalog	Vo.
4. Title and Subtitle			5. Report Date	
		•	May 1974	
AERONAUTICAL ENGINEERING A Special Bibliography (· -	3. Performing Organizat	tion Code
7. Author(s)			8. Performing Organizat	ion Report No.
	•	Ti	D. Work Unit No.	
9. Performing Organization Name and Address		· ·	,	
National Aeronautics and	Space Adminis	tration 1	1, Contract or Grant N	lo.
Washington, D.C. 20546				}
·		1:	3. Type of Report and	Period Covered
12. Sponsoring Agency Name and Address				
The opening righting trains and sections		<u> </u>	<u>., .</u> ,	
		Į 1·	4. Sponsoring Agency	Code
15. Supplementary Notes				
16. Abstract			<u></u>	
10. 10.000				
		_		
		graphy lists 24		
report	s, articles,	and other docum	en ts	
		NASA scientifi		
		mation system i		
April		macion bybcom .		
АРІТІ	12/4.			
			•	
		4		
17. Key Words (Suggested by Author(s))		18. Distribution Statement		
1				
Aerodynamics	,			
Aeronautical Engineering		11 1		- d
Aeronautics		unclassiti	ed - Unlimit	ea
Bibliographies				
19. Security Classif, (of this report)	20. Security Classif. (c	if this page)	21. No. of Pages	22. Price*
Unclassified	Unclassifi	e d	77	
				